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ABSTRACT

This report offers numerous cross-sectoral explorations in the context of health and human resources analyses in Africa. Intended as a resource document for funding agencies, program managers, and policy makers in Africa, the study aims to spark interest in using basic education to foster behavior conducive to broad-based, sustainable economic development. The report presents findings and analysis of research carried out in missions to Botswana, The Gambia, and Senegal from December 1992 to October 1993. The paper evaluates and documents lessons learned from programs designed to integrate health, population/family planning, environmental issues, privatization, and democracy education into basic education curricula in African nations. The first section of the report discusses recent findings about the way students learn and how this research affects curriculum development, curriculum and instruction, and curriculum and evaluation. In the second section three case studies outline the curriculum development process in Botswana, The Gambia, and Senegal. The third section of the report presents recommendations and observations. An annotated bibliography of programs and materials is included in the appendix. (EH)

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Final Report on Lessons Learned on The Integration of health, Population, Environment, Democratization, and Privatization Into Basic Education Curriculum in Africa

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This report reflects findings and conclusions of missions to Botswana, The Gambia and Senegal conducted in December 1992, January 1993, and October 1993 by Joyce Cain (Michigan State University) and Susan Schuman (University of Massachusetts). Editing and research support was provided by Diane VanBelle-Prouty and Dena Duerbeck (both with Institute for International Research).

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ACRONYMS AND TERMS

ABACED	NGO initiated by a Dakar school teacher in 1991
ACO	African Curriculum Organization
ARHEC	African Regional Health Center
BEC	Basic Education Consolidation Project
BOTSPA	Botswana Fund for Population Assistance
CDRC	Curriculum Development and Research Center
CECI	Canadian Center for Research and International Cooperation
CILSS	Comite Permanent Interétats de Lutte Contre la Secheresse dans le Sahel (Inter-States Committee for Drought Control in the Sahel)
CONGAD	NGO Coordinating Body in Senegal
DANEDA	Danish Red Cross
EEC	European Economic Community
EMIS	Education Management Information System
ENDA	Environment and Development Action in the Third World
FLE-POP	Population and Family Life Education
FLED	Family Life Education
GEAP	The Gambia Environmental Organization
GNP	Gross National Product
GOB	Government of Botswana
GOG	Government of The Gambia
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome

HRDP	Human Resources Development Project
IEC	Information, Education, and Communication
IFESH	International Foundation for Education and Self-help
INEADE	Institut national pour l'étude et l'action pour le developpement de l'éducation (National Institute for Study and Action for Educational Development)
IPN	Institut Pédagogique National
JSEIP	Junior Secondary Education Improvement Project
KAP	Knowledge, Attitudes, and Practices
KCS	Kalahari Conservation Society
MOE	Ministry of Education
NACP	National AIDS Control Programme
NGO	Non-governmental Organization
NORAD	Norwegian International Development Agency
PACT	Peer Approach Counseling by Teens
PEIP	Primary Education Improvement Program
PFIE	Programme de formation et d'informationn pour l'environnement (Training and Information Program on the Environment)
PVO	Private Voluntary Organization
ROTG	The Republic of the Gambia
SES	Socio Economic Status
SIDA	Swedish International Development Authority
STD	Sexually Transmitted Diseases
SWAGGAM	Society for Women Against AIDS in the Gambia
TIPE	Training in Protection of the Environment

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TANGO	Umbrella Organization for all NGOs in the Gambia
TOSTAN	NGO founded by a former Peace Corps volunteer in 1988
UNDP	United Nations Development Programme
UNESCO	United Nations Education Science Culture Organization
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VSO	Voluntary Service Organization
WHO	World Health Organization

EXECUTIVE SUMMARY

A. OVERVIEW OF THE STUDY

Many African nations have developed educational strategies and programs to combat pressing problems of high rates of population growth, rapid degradation of the environment, increasing prevalence of sexually transmitted diseases (STDs) and Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS), civil unrest, and declining economies. Nigeria has developed a new curriculum that, particularly in an integrated science program, "places emphasis on exploration and investigation of the child's environment...designed to foster conceptual learning of natural phenomena" and which teaches "scientific processes by encouraging the development of powers of observation and classification, and of making intelligent guesses..." (Adeniyi, 1987). The program there facilitates student understanding of the role of science in meeting everyday problems in the context in which they live. Because of the framework in which science education is developed and taught, there is a cultural aspect to science education that is very empowering to both the student and the community.

Unfortunately, not all countries have been as successful as Nigeria in developing or redesigning curricular programs that effectively marry new technology with societal needs. Although many countries have tried to accomplish this with an information, education, and communication (IEC) approach, the evidence suggests that the need remains for both operational and behavioral research to better inform and guide program designs and curriculum development.

This report presents findings and analysis of research carried out to evaluate and document lessons learned from programs designed to integrate health, population/family planning, environmental issues, privatization, and democracy education into basic education curricula in Africa. The first section of this report will discuss some of the recent findings about the way students learn and how this research affects curriculum development, curriculum and instruction, and curriculum and evaluation.

Three case studies outlining the curriculum development process in Botswana, The Gambia, and Senegal will be presented in the second section. The third section of the report will present recommendations and observations. An annotated bibliography of programs and materials available is included in the Appendix.

Research findings and analysis were drawn primarily from: (1) a review of literature; (2) project documents related to the integration of health, population, and environment education into basic education; and (3) the case studies. A panel of experts was convened prior to field work to identify and prioritize the critical questions and issues to be addressed by this research project.

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Seven questions served to direct research and data collection:

1. What efforts are currently being undertaken to integrate the critical topics into basic education curriculum?

2. What is the process of curriculum decision-making for these efforts?

3. How are innovative programs introduced into the education system?

4. Who is involved in curriculum decision-making, curriculum development, and curriculum design?

5. What are elements within the educational system that foster positive and sustainable change?

6. What are ways to mobilize the formal education sector to address critical issues within the basic curriculum?

7. What generalizations can be made to guide policy, with the intent of improving donor agency efforts?

The focus of the project was curriculum innovations and reform within the formal education sector, although a limited amount of information is given regarding various non-formal education settings. Basic education, therefore, is used interchangeably throughout the report with education at the primary and junior secondary/middle school levels, unless otherwise noted. For the purposes of this study, curriculum is defined as both planned and unplanned learning experienced by the learner in a given educational setting.

B. CASE STUDIES

The goal of the country case studies was to observe ongoing curriculum development in selected African countries. Although a number of factors influenced final site selection (including accessibility within the limited time frame of the project, host country and United States Agency for International Development (USAID) mission receptivity to host the project, and in-country political conditions), the three countries selected provide a unique overview of curriculum development taking place in Africa today.

Botswana has a long history of curriculum development and brings a rich perspective of what needs to be done and ways in which curriculum development can be achieved when certain critical conditions are met. In addition, Botswana is currently in the process of developing curriculum programs in varying degrees in all five key areas. In contrast, Senegal and The Gambia have both begun curriculum reform efforts more recently. They also highlight the collaboration between countries sharing common borders to address critical issues such as environment education. Furthermore, Senegal provides information about what is being done in curriculum development in francophone Africa.

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Data collection occurred during all three visits. Two researchers spent 15 days in December 1992 collecting data in Botswana. Two additional visits, to Senegal and The Gambia, occurred in January 1993. The researchers each visited 1 of the 2 countries for approximately 10 days.

Because of the time constraints for in-country visits, data collection and interviews concentrated on the following: (1) officials in the Ministry of Education and related ministries who were likely to have direct knowledge of processes and curriculum related to the critical topics; (2) curriculum developers and curriculum development centers; (3) teachers; (4) students; (5) parents; (6) representatives of non-governmental organizations (NGOs) and voluntary organizations; and (7) local magistrates/members of governing bodies. Although these people were often quite knowledgeable about curriculum and schooling, frequently they had limited knowledge and scarce data on costs of programs.

C. LESSONS LEARNED

Educational planners are forced to develop programs of studies that meet the needs and expectations of an increasingly more diverse community and find themselves in a situation where teachers have too much to teach with too few resources and too little time. Too frequently, the response is to add yet another element to the program of studies. This curricular expansion is usually accomplished by shortening the amount of time spent on any given subject and breaking learning into discrete subject-centered learning components.

Much of the current research on learning and teaching has shown that this approach reduces the quality and depth of student learning (Bondi, 1993). Research findings that have focused on the teaching/learning process have identified key guidelines for curriculum planners. These guidelines are summarized below.

Determine Needs and Establish Priorities

Content presented in the planned curriculum must constantly be re-evaluated in order to determine its relevance to the needs of the students and society. This has enormous implications in developing countries where technological development and democratic movements are rapidly and repeatedly changing the social, economic, political, and cultural landscape. It is even more germane when one considers the need to provide students with skills that will make them competitive in a global market.

Given this broad mandate and such a macroperspective, curriculum development is increasingly a process that deals with systemic concerns and responds to a larger educational reform effort. Selecting the *scope* and *sequence* of what must be taught becomes an overwhelming task. It means that educational planners must develop an overall paradigm and mechanism for the introduction of new content and the treatment of knowledge on a long-term basis that allows the system to be responsive to diversity in ever-evolving communities.

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Integrate New Technology and Information in the Existing Curriculum

Curriculum integration is a response to the desire to make curriculum socially relevant and personally meaningful. It requires an interdisciplinary approach to curriculum planning. Integration means that subject matter is characterized by thematic integrity: there is a unifying organizational element around which curriculum is planned--a wide breadth of application and range of activities which fit into increasingly larger wholes.

Typical organizational structures that have been used as vehicles for integration include concentration, correlation, integration of a tool subject, and comprehensive problem solving. *Concentration* is when students focus on a limited number of core classes, usually around four. Although there is generally a depth of preparation in each subject area, the linkages between the areas are highlighted and reinforced. *Correlation* allows for distinct subject areas but teaching is developed through concept connections such as using a particular period of time to frame the lessons taught in science, language, history, etc. *Integration of a tool subject* uses skills learned in one subject area as a tool for learning skills in another area. Finally, a *comprehensive problem-solving* approach to integration, stresses the search for solutions to issues such as HIV/AIDS or the environment, as the framework around which content areas are presented and discussed.

Assign High Priority to Global and Multi-cultural Concepts

Several factors including: (1) a wide diversity of groups (religious, ethnic, language, socio-economic status, etc.) within the school community; and (2) a decrease in funds and resources to the sector, require that schools be discriminating in what they teach. A growing need to educate students for economic competitiveness has increased pressure for schools to ensure that the curriculum addresses employment perspectives in an increasingly global marketplace. Given the consistency of research findings that demonstrate the heightened impact of an integrated curriculum based on critical issues, it might be well for schools and school systems to explore innovative approaches to developing a more holistic framework for these issues as well.

The literature on curriculum development in the sub-Saharan African countries has long suffered from a scarcity of field-based evidence, incorporating the objectivity of external observers with the particular insights of practitioners in the field. The classroom observations and interviews with educators in the countries involved in this study have helped to fill this gap, by providing a much richer understanding of the issues surrounding curriculum development, and establishing a much clearer analytic framework for the development of a working hypotheses. Along with the accompanying review of findings from other studies relating to curriculum and content in developing countries, they have allowed the construction of a number of assertions regarding the nature of curriculum in these countries, and the policy implications for donors and educational planners.

1. Classroom instruction is exam-driven. While this presents a particular challenge for curriculum development, since it means that the intended curriculum is frequently not being implemented, it also demonstrates the potential for curricular reform based, in part, on reform of evaluation and measurement procedures.

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2. Interaction patterns within the classroom are almost exclusively teacher directed. While similar patterns have been observed in many other geographic areas, they may be particularly limiting within those sub-Saharan African countries where trained teachers are in extremely short supply. This phenomenon also limits and distorts the evaluation process since teachers, because of this interaction pattern, are unable to evaluate students' understanding as it evolves through open exploration of concepts and ideas in the classroom. Evaluation then is forced into a static, summative mode that has much less impact on classroom behavior and much less potential for improving student learning. While these interaction patterns may be susceptible to change over time, the short-term implication is the need to couple curriculum reform with intensive in-service teacher training.

3. Instructional materials are rarely used in the classroom and where used they are seldom produced locally. This is unfortunate, because experience shows that teachers can easily learn to produce excellent teaching aids--posters, textbooks, alternative types of reading materials and manipulatives used in the teaching of mathematical and scientific concepts. This not only casts the teacher as a learner, an extremely important paradigm shift in itself, it also connects school learning with the here-and-now in the mind of teachers and students--another not-insignificant paradigm shift.

4. The curriculum is structured in ways that prevent language from making a full contribution to the learning process. Ironically, this has the perverse effect of turning Africa's rich oral tradition, potentially its greatest educational asset, into an educational liability, limiting both access to schooling and persistence within the schooling program for those children without easy access to a metropolitan language. Schools must explore and experiment with language--both maternal and second languages. The curriculum is a potential source of dramatic change if children become empowered through language. Since it is the medium in which knowledge is acquired, students need to develop and master both receptive (reading/listening) and expressive (speaking/writing) language skills.

   Despite the controversy that surrounds language of instruction, common sense and curriculum imperatives must prevail at the classroom level. Whatever their long-term needs, children also need short-term affirmation: this means that they need a voice from the earliest days of schooling. Their language and their culture must be the basis of their first schooling experience. This may be the single greatest curriculum challenge facing educational planners today, particularly in the French-speaking countries.

5. Student grouping patterns are highly predictable and generally foreign to the learning style children bring to the classroom. In an oral, sharing tradition peer tutoring, small group learning patterns and similar approaches surely have something to offer. Grouping patterns need to enhance cooperation in the classroom and must not reinforce gender boundaries and isolation and other types of social marginalization and stratification. Alternative grouping patterns can improve socialization in the classroom and increase the learning capacity of all

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children from the brightest to the slowest. This underscores the need for dialogue and the importance for in-service teacher training to strengthen teacher problem-solving skills, which can then be applied to these group settings.

6. The learning environment is organized as a function of perceived teacher needs rather than student needs. Methodologies and instructional techniques need to reinforce a more participatory, child-centered environment where the child feels emotionally and physically safe.

7. Gender-related issues are a frequently unacknowledged factor with great potential for changing behavior patterns related to health, environment, and population. Women and girls not only reproduce, but are often the guardians of households and the environment. Economic conditions and health factors converge in those cases where women and girls find it necessary to survive or gain economic independence by selling sexual favors. STDs, including HIV/AIDS, have become a greater threat to many women and girls facing limited social and economic options. Education for women and men in the countries studied often fails to provide women with equal access to the law.

8. The integration of health, population, and environmental issues into basic education is currently in an embryonic stage, with curriculum and materials yet to be fully developed and implemented at the national level. The fact that there is overwhelming public consensus and a clear mandate from the Ministries of Education to address these critical and often controversial issues in the school curriculum creates a positive climate for change. The Ministries are skilled in using consultation with a wide range of influential sectors of society to raise public awareness and achieve consensus. It would appear, however, that the success of these efforts to introduce new elements into the curriculum may be compromised by the frequently rigid, top-down hierarchies and centralized decision-making processes within the educational bureaucracies. This may combine, with a sort of negative synergy, with a growing tendency at the classroom level to skirt those topics which may hold the greatest potential for influencing behavioral change.

9. Consultation is not synonymous with participation in curriculum decision-making. The results may be apparently well-designed materials and internally coherent programs with little or no external relevance to target classrooms. This points up the need for teacher involvement as "policy-brokers" in curriculum matters.

10. Teacher training strategies currently fail to address the new curriculum environment of most countries. The environmental, population, and family life initiatives assume "multidisciplinary" integration of the new topics across the curriculum, and a new pedagogical approach to education (student-centered, problem-solving, hands-on) that departs significantly from traditional student-teacher roles. Both these assumptions require significant teacher training at a conceptual level which is difficult to address through the current in-service strategy of the "multiplier effect." It may be more effective to devote scarce time,

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energy and resources in developing strong regionally-based teacher training and support (that also assist teachers in developing the topics) rather than in costly new curriculum outlines and materials.

11. Greater teacher participation in curriculum decision-making often provides teachers with needed incentives to implement new programs and practices not present in the current system. Change agents must be found among local teachers, who are also better placed to "sell" new approaches, especially on sensitive topics such as family life education and human sexuality, to parents and community members. It is clear that there is growing recognition of the need to decentralize the Ministry of Education and spread decision-making power among regional and local units. It is less clear whether there is an understanding of the conceptual and qualitative changes which must occur for decentralization to lead to the desired increase in local ownership of curriculum decisions, as well as responsibility for the relevance of educational programs.

12. Regional school partnerships, and regional teacher centers in some countries have provided effective models that may suggest worthy strategies for future donor agency support. These efforts often link specific school improvements to teacher training and education, and join schools with youth-serving agencies outside schools.

If one can assume that curriculum improvements are effective only insofar as they efficiently and meaningfully get translated into a changed classroom environment for students, then funding for curriculum improvement efforts should:

- recognize the importance of incorporating in-service training strategies to provide teachers with the meta-cognitive skills to develop their own repertoires of how to address critical issues in their own schools and classrooms;

- support decentralized efforts at teacher training and headteacher training, but only in conjunction with support for establishment of new regional education entities with access to information sources and funding, and the authority to make regionally meaningful curriculum decisions;

- train regional education officers and headteachers in assessment and evaluation of teachers as a cornerstone of efforts for implementation of new curriculum approaches;

- support the development of a regional network of educators that will focus on issues of quality in teacher training, curriculum, and expected outcomes of schooling, especially with respect to health and environmental education; such a network would include representatives from Ministries of Education, Higher Education, Health, and Natural Resources; and

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- move beyond goals of awareness and talk about dissemination of information and behavioral changes; value shifts are likely to influence and be influenced by peers, family, community practices, economic realities, and tradition.

D. PERSPECTIVES AND PROMISING APPROACHES

This study, which was exploratory in nature, provided incidental or anecdotal information about a number of unresolved curriculum issues that deserve more comprehensive treatment through follow-up studies. Areas identified as meriting much further data and analysis include the following: (1) institutional support for curriculum development; (2) linkages between curriculum development and teacher training, both pre- and in-service; (3) curriculum content; (4) the relationship between curriculum content issues and broader school improvement initiatives; and (5) linkages with measurement and evaluation.

Institutional Support

In most of the French-speaking countries, Instituts Pédagogiques Nationaux were established in the 1970's for the purpose of resolving the following curriculum issues: (a) scope and sequence of grade-specific subject matter; (b) textbook development from manuscript development through publication, distribution, teacher guides and related teacher training; (c) development of teaching materials, and in many cases; and (d) in-service teacher training. Additional studies are urgently needed to determine the extent to which these objectives are being met, the general efficiency of the Instituts Pédagogiques Nationaux (IPNs) and institutional linkages with the inspectorates, the general secretariat of the ministry, regional educational offices, etc. There is a wealth of anecdotal evidence to suggest that in most countries, the IPNs are not working well; similar issues need to be explored for the English-speaking countries, even though these responsibilities are generally housed within different institutions than in the French-speaking countries.

Linkages With Teacher Training

We need much better information about these linkages for the pilot countries. In the U.S., under the impetus of the Holmes Group findings, much evidence is emerging to demonstrate the importance of school-based teacher training. Since many developing countries have explicitly linked curriculum development and teacher training, it seems reasonable to conclude that for this linkage to be effective, it should be based on in-school practice, but at present we know almost nothing about the extent to which this is being done.

As countries respond to the particular curriculum challenges posed by multi-grade, double-shifting and large class situations, these linkages will become even more important.

Curriculum Content

A recent study in Guinea showed that 65% of the individuals portrayed in the newest grade 1 reading books were male. Supplemental studies are needed in the pilot countries to examine gender, urban, and socio economic status (SES) biases. Another key content issue is related

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to the transition from a mother tongue to a metropolitan language. This transition is handled differently in each country, but with general unimpressive results in most. Additional studies should focus on developing major pilot-initiatives in this area.

School Improvement Initiatives

While the earlier effective schools "movement" and the related school improvement models stressed the importance of regular monitoring of student learning and attitudes supportive of learning, it has generally been accepted that changes in particular aspects of the curriculum are unlikely to lead to overall school improvement (see for example, Lockheed and Verspoor, 1992). We believe that this conclusion, reached almost exclusively from studies in developed countries, where the curriculum environment is very different, is premature. Much more information is needed about cultural and institutional impediments to content change.

Measurement and Evaluation

Three types of evaluation can be envisaged: (1) evaluation of student learning; (2) evaluation of teacher effectiveness; and (3) evaluation of curriculum content. Current student evaluation is generally normative and, except at the school level, almost never criterion based. Yet criterion-based evaluation linked to the intended curriculum is a vital input for educational planners and teachers alike. This should be a key priority of future studies.

E. CONCLUSION

A series of supplemental studies should be conducted to provide country-specific information about curriculum development, and about distortions between the intended and the implemented curriculum. These studies should focus on practical recommendations leading to changes in institutional practice and organization structures as a vital part of broader school improvement approaches.

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I. CURRICULUM IN CONTEXT

A. OVERVIEW

What is Curriculum?

Last year, a little boy in a classroom in West Africa, asked a visitor the following question, "What is the tallest mountain in the world?" After being given the answer, which he carefully copied down, he was asked why he had asked that particular question. "I always wanted to know," he replied, "and no one had ever been able to tell me."

Browning wrote, "A man's reach must exceed his grasp or what's a heaven for?" Well, that is what classrooms are for too. For all the children, and societies, who want to know the unknown and to reach the hitherto unreached.

Curriculum development is the process by which choices are made in designing learning experiences for students. It is the process by which children are given opportunities to reach for the unknown, and by which entire nations can make themselves anew. It is also a process through which questions are asked that serve as the framework for an educational philosophy and learning theory (Ausubel, 1968; Bruner, 1960; Gagne, 1962 and 1970; Schwab, 1962 and 1964).

Curriculum development was initially rooted in the educational theory that suggested learning should be planned around clearly defined skills and discrete objectives in each subject area (Taba, 1960; Tyler, 1949). More recently, however, research in cognitive development has demonstrated that children do not learn by mastering discrete skills. Rather, they respond to the gestalt of learning environments and the context of meaningful experiences (Doyle, 1992; Eisner, 1985). The realization that there are intricate and profound relationships between science, technology, and society has brought about the establishment of new directions in education. This understanding has had a dramatic impact on curriculum development globally.

Many African nations have developed educational strategies and programs to combat pressing problems of high rates of population growth, rapid degradation of the environment, increasing prevalence of STDs and HIV/AIDS, civil unrest, and declining economies. Nigeria has developed a new curriculum that, particularly in an integrated science program, "places emphasis on exploration and investigation of the child's environment...designed to foster conceptual learning of natural phenomena" and which teaches "scientific processes by encouraging the development of powers of observation and classification, and of making intelligent guesses..." (Adeniyi, 1987). The program in Nigeria facilitates student understanding of the role of science in meeting everyday problems in the context in which they live. Because of the framework in which science education is developed and taught,

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there is a cultural aspect to science education which is very empowering to both the student and the community.

Unfortunately, not all countries have been as successful as Nigeria in developing or redesigning curricular programs that effectively marry new technology with societal needs. Although many countries have tried to accomplish this with an IEC approach, the evidence suggests that the need remains for both operational and behavioral research to better inform and guide program designs and curriculum development.

Overview of the Study

This report presents findings and analysis of research carried out to evaluate and document lessons learned from programs designed to integrate health, population/family planning, environmental issues, privatization, and democracy education into basic education curricula in Africa. The first section of this report will discuss some of the recent findings about the way students learn and how this research affects curriculum development, curriculum and instruction, and curriculum and evaluation.

Three case studies outlining the curriculum development process in the five key curricular areas that has occurred in Botswana, The Gambia, and Senegal will be presented in the second section. The third section of the report will present recommendations and observations. An annotated bibliography of programs and materials available is included in the Appendix.

Research findings and analysis were drawn primarily from: (1) a review of literature; (2) project documents available related to the integration of health, population, and environment education into basic education; and (3) the case studies. A panel of experts was convened prior to field work to identify and prioritize the critical questions and issues to be addressed by this research project.

Seven questions served to direct research and data collection:

1. What efforts are currently being undertaken to integrate the critical topics into basic education curriculum?

2. What is the process of curriculum decision-making for these efforts?

3. How are innovative programs introduced into the education system?

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7. What generalizations can be made to guide policy, with the intent of improving donor agency efforts?

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B. CURRICULUM DEVELOPMENT

What Matters?

Although the field of curriculum is relatively new as an academic field of inquiry, the issues it deals with have long been basic themes of educational discourse: Who should be responsible for educating youth? What should be taught? At what age? For what purpose? At what pace?

Long before schools were formal structures with clearly defined mandates and philosophies, the understanding existed that the more informed and learned of society would assume responsibility for the youth. Among the earliest written records of "curricular planning" are Plato's renowned *Dialogues* which share Socrates' philosophy of education and thoughts on knowledge, and *The Republic* which sets forth Plato's curricular recommendations for the ideal state. Even then controversy existed over what should be taught, when it should be taught, how it should be taught, and by whom it should be taught (Schubert, 1986).

Today these questions take on greater urgency because of the rapid explosion of knowledge and critical societal issues which schools are required to address. Educational planners are forced to develop programs of study that meet the needs and expectations of an increasingly more diverse community and find themselves in a situation where teachers have too much to teach with too few resources and too little time. Too frequently, the response is to add yet another element to the program of study. This curricular expansion is usually accomplished by shortening the amount of time spent on any given subject and breaking learning into discrete subject-centered learning components.

Much of the current research on learning and teaching has shown that this approach reduces the quality and depth of student learning (Bondi, 1993). Research findings that have focused on the teaching/learning process have identified key guidelines for curriculum planners. These guidelines are summarized below.

Determine Needs and Establish Priorities

Content presented in the planned curriculum must constantly be re-evaluated in order to determine its relevance to the needs of the students and society. This has enormous implications in developing countries where technological development and democratic

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movements are rapidly and repeatedly changing the social, economic, political, and cultural landscape. It is even more germane when one considers the need to provide students with skills that will make them competitive in a global market.

Given this broad mandate and such a macroperspective, curriculum development is increasingly a process that deals with systemic concerns and responds to a larger educational reform effort. Selecting the *scope* and *sequence* of what must be taught becomes an overwhelming task. It means that educational planners must develop an overall paradigm and mechanism for the introduction of new content and the treatment of knowledge on a long-term basis that allows the system to be responsive to diversity in ever-evolving communities.

Integrate New Technology and Information in the Existing Curriculum

Curriculum integration is a response to the desire to make curriculum socially relevant and personally meaningful. It requires an interdisciplinary approach to curriculum planning. Integration means that subject matter is characterized by thematic integrity: there is a unifying organizational element around which curriculum is planned--a wide breadth of application and range of activities which fit into increasingly larger wholes.

Typical organizational structures that have been used as vehicles for integration include concentration, correlation, integration of a tool subject, and comprehensive problem-solving. *Concentration* is when students focus on a limited number of core classes, usually around four. Although there is generally a depth of preparation in each subject area, the linkages between the areas are highlighted and reinforced. *Correlation* allows for distinct subject areas, but teaching is developed through concept connections such as using a particular period of time to frame the lessons taught in science, language, history, etc. *Integration of a tool subject* uses skills learned in one subject area as a tool for learning skills in another area. Finally, a *comprehensive problem-solving* approach to integration, stresses the search for solutions to issues such as HIV/AIDS or the environment, as the framework around which content areas are presented and discussed.

Assign High Priority to Global and Multi-Cultural Concepts

Several factors including: (1) a wide diversity of groups (religious, ethnic, language, socio-economic status, etc.) within the school community; and (2) a decrease in funds and resources to the sector, require that schools be discriminating in what they teach. A growing need to educate students for economic competitiveness has increased pressure for schools to ensure that the curriculum addresses employment perspectives in an increasingly global marketplace. Given the consistency of research findings that demonstrate the heightened impact of an integrated curriculum based on critical issues, it might be well for schools and school systems to explore innovative approaches to developing a more holistic framework for these issues as well.

Who Takes Part?

Curriculum research to date has inadequately addressed the tension between the implications of community ownership and school or teacher ownership of the curriculum. Indeed,

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discussions of community ownership are often made independent of considerations about what incentives might prevent the school from actively supporting this development.

The case for community ownership is relatively clear. Research has shown that allowing more stakeholders to take part in the curriculum development process creates not only a more responsive system but provides for a greater measure of success. This collaboration in decision-making establishes trust and respect among all participants and ensures that community-based concerns and issues have a forum in which dialogue and discussion can take place about what schools need to teach (Peshkin, 1992). In this sense, communities, rather than schools, come to "own" the curriculum.

In addition, parent-assisted curriculum development extends learning into the home in several ways. It allows parents the opportunity to take part in the decision-making process making them more responsible for learning objectives in their children's education. It also creates a mechanism, a conduit, which extends learning activities on the home front thereby giving parents the opportunity to share in the learning process (California Department of Education, 1992).

These lines of research, however, tend to assume that schools will participate in encouraging community ownership through enlightened self-interest. This may not always be the case, as many teachers find little time for innovative outreach, particularly where parents are seen as either uninterested in or incapable of serving as fully informed partners in a complex change process. Yet schools may find themselves forced by a changing economic environment to actively explore these approaches, as alternative options for funding schools become a critical issue in an increasing number of countries. Developing creative partnerships with the private sector not only provides a mechanism for the private sector to collaborate about what the "world of work" needs are in the school curriculum, but also allows the school and private sector to establish ways in which the sector can support schools through both financial resources and expertise.

Much of the existing research literature on the teacher as curriculum maker arises from the literature on school reform. This body of literature highlights the critical role that the teacher has in reform initiatives. It demonstrates that frequently the discrepancy between reform objectives and what is actually achieved is significantly influenced by classroom teachers. Part of the disjuncture between defined objectives and the achieved end is because decisions were made about what teachers needed to do in order to effect change in the system without providing teachers an active role in the decision-making process. Teachers were perceived as conduits in which the reform agenda passed yet were not perceived as a force which could redefine or resist what was intended to be implemented (Clandinin and Connelly, 1992; Hargreaves, 1984; Kimpston and Anderson, 1986).

Teachers need to have an active voice concerning what is taught in schools. This means that not only must teachers be included in curriculum development, they must also have a central role in research about classrooms and the teaching/learning process and become "policy brokers" (Schwille et al., 1982). This does not necessarily mean that teachers must engage in formal research activities. It does mean, however, that research which focuses on ways that teachers make sense of their teaching practice is crucial to effective curriculum development.

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It also means that teachers must be allowed to engage in a collaborative study of their teaching, and develop a mechanism through which to reflect on classroom practices. Finally, it means that the research dealing with curriculum development must focus much more on the dynamic processes associated with school improvement efforts than on the relatively static concepts associated with identifying characteristics and models of school effectiveness (Kagan et al, 1993; Van Manen, 1990).

C. CURRICULUM AND INSTRUCTION

Learning Environment and Instructional Materials

Rather than focusing on simple and discrete skills, students should engage in complex and holistic thinking. This means that learning is situated within the context of meaningful processes of making decisions, solving problems, evaluating situations, etc. It also means that it is connected to real-world situations and events and aided by the use of tools that one would use outside of the classroom context to solve a similar kind of problem. It also means that rather than being focused on individual subject areas, learning is interdisciplinary, cutting across and tying together many subjects. This means that teachers need to collaborate and work together to develop teaching units and activities. It also means that students should explore ideas in depth and study fewer things (McNeil, 1990; Goodlad and Su, 1992).

Research has demonstrated that students learn best when interacting with and learning from others including their peers as well as their teachers. This provides for a situated learning environment in which students make unique contributions to their own learning and the learning of others based on their own life experiences, knowledge, and cultural backgrounds. Allowing for multiple grouping strategies in the classroom not only provides for this synergy in classroom learning but also allows students to develop social interaction skills and leadership potential (Eisner, 1985; Schubert, 1986).

Because learning is active, interactive language becomes the conduit through which all learning takes place. Language instruction should promote reading, writing, listening, and speaking as effective tools for communicating with those around us for work, pleasure, and reflection of their own lives and others both in and out of school. This means that children need to use language--both written and oral--framed around both content and process (Applebee and Purves, 1992; Hiebert and Wearne, 1993; Langer and Allington, 1992).

Providing a sufficient level of learning resources in ~~the~~ classroom is a prerequisite for a curriculum that places emphasis on students' ~~thinking,~~ exploring real life situations, and implementing creative problem-solving. They must be provided with a wide range of manipulatives and research materials. Examining ~~their~~ own community and learning environment for effective resources (including local experts) becomes a part of the curriculum and learning process.

Learning does not require either a didactic or a dialectic relationship between teacher and student. It can be fostered through the creation of an intellectually productive environment via the selection and arrangement of material. Studies in developed countries have

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demonstrated that comparatively less reliance needs to be placed on textbooks and paper and pencil activities. Greater investments needs to be made in low-cost manipulatives, materials for activity centers, research materials, trade books, library books, and basic science equipment (Venezky, 1992). Before these findings can be fully applied to sub-Saharan Africa, however, more research is needed to determine the threshhold level at which textbooks begin to provide diminishing returns. While it is unlikely that this level has been reached in many sub-Saharan African countries, it is clear that textbook investments, even in these areas, will be considerably diminished in impact if not accompanied by in-service teacher training about their use.

Textbook programs should, at the least, be accompanied by training in the use of complementary activities and approaches: activity centers, projects, simulations, debates, dramas, investigations, media, and meditation that support higher order thinking and creative problem-solving. These activities require transfer so that previous learning influences the acquisition of new, or second, learning. It also requires students to create schematas and conceptual structures by analysis of facts and conditions relevant to the task at hand. With these types of activities students combine knowledge with metacognitive strategies such as having a plan, identifying subproblems, and examining alternative solutions (brainstorming). Time becomes a critical ingredient as students are provided with adequate wait time and blocks of time to explore ideas, ponder solutions, test hypotheses, and develop answers.

Teacher Training and Teacher Practices

Curriculum is the content that is taught; teaching is how that content is taught. Therefore, introducing students to a well-defined curriculum is dependent upon having a cadre of teachers who can effectively implement that curriculum in the classroom. Research studies during the past fifteen years that have employed process-product research methodologies focusing on teacher behavior, learning outcomes, and classroom ethnographies have demonstrated that teacher behavior and interaction have a direct relationship to student learning. The research has also demonstrated that with few exceptions teacher-directed interaction in which the teacher dispenses of knowledge, dominates the talk, and asks most of the questions, limits learning (Kirst and Walker, 1991; Knapp et al. 1983; Short, 1983).

Research findings on effective teaching/learning practices have also underscored that certain conditions and methodologies can significantly influence not only how well teachers are trained but how much they actually introduce to their own classrooms from the training program. Therefore, if staff development and teacher training programs are to be effective (and efficient), efforts need to be taken to ensure that ~~what~~ is learned in the training program is correctly introduced into the classroom (Erickson, ~~1985~~).

In order to accomplish this, several pre-conditions for the training program need to exist (see summary chart on the following page). First, it is essential that there be a degree of shared understanding about the definition of teaching, including appropriate behaviors, roles, and obligations. More than one definition can be developed; indeed, the definitions that are eventually developed <u>should</u> change as the program evolves. This evolution helps interlocutors identify areas of need and establish minimum standards for teacher qualifications. Furthermore, it underscores how both the discourse and training program are

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an iterative process that can be transformed in response to changing conditions, needs, and *perceptions* about the teaching/learning process.

A second pre-condition for the training program is the existence of an effective channel of communication. This means that horizontal and vertical communication mechanisms are in place and employed to disseminate information about expectations, responsibilities, requirements, findings, etc. of the training program. More importantly, however, it highlights that the training program is a collaborative process and includes all stakeholders (including teachers) in the dialogue. If mechanisms to share information about the program are not in place, there is the risk that key people/and or institutions will not be adequately engaged or worse, that resistance to the program will develop.

A third pre-condition is the existence of incentive and motivation for engaging in the teacher training program, along with the provision of time for recipients to adequately take part in the activities. It cannot be assumed that any effort to improve what happens in schools will be viewed positively. Frequently, training programs place additional obligations on teachers who are already unable to meet job responsibilities. Consequently, despite a shared desire to improve what happens in schools, the programs do not work and teachers are not engaged in the staff development process.

A fourth pre-condition to ensure continued improvement and relevance of the teacher training is the existence of an effective system of monitoring, evaluation, and feedback. One level of evaluation is designed to capture the performance of the teacher in the system and provide feedback to the training center areas that need improvement. A second level is a meta-evaluative function that determines how well the system of teacher evaluation and program feedback is working, with the designed purpose of effectively creating improved teaching and learning in the classroom.

Preconditions for Teacher Training Programs

1. Shared understanding about the definition of teaching.
2. Existence of an effective channel of communication.
3. Existence of incentive and motivation for engaging in the teacher training program.
4. Existence of an effective system of monitoring, evaluation, and feedback.

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Recent findings about teacher training programs have shown that four principles guide the most effective programs. While each of these principles can be considered as universal in intent and in philosophy, each must be understood as site-specific in terms of applicability and practice.

Learning is Experiential

All teachers come into the classroom with a preconceived notion of how the classroom should appear, what interaction in the classroom should be like and how students should perform. This perception is in most cases based primarily on memories of their own schooling experiences, and it may or may not be further influenced by what they have learned about teacher roles and responsibilities during their pre-service education program. Invariably, it is the earliest impressions of the classroom environment and the teaching/learning process that tend to be the stronger force in a teacher's framework and definition about teaching and what should take place in a classroom (Lortie, 1965). Given a Third World context where a significant number of teachers are inadequately trained and have limited pre-service training, the implications of the early schooling experiences should not be underestimated.

It is essential that training programs confront teacher perceptions (and all too frequently, misconceptions) about teaching and learning. Ideally, this means that the more successful training programs are conducted in classroom settings. This provides a learning environment for the teacher-trainee to experience first hand that desired changes in the teaching/learning process can be accomplished; it then provides them with the opportunity to observe how these changes can best be implemented in their own classrooms. Therefore, it is imperative that teacher training programs respond to innovations in the classroom based on teachers' reflections about their own experiences.

Learning From Modeling

Exposure to a model can result in either imitation or incidental learning. Imitation occurs when the learner observes the model's behavior and then copies it. Observations of a model can also produce incidental or inferential learning. Learners observe the model's behavior and make inferences about the model's beliefs, attitudes, values, and personality characteristics.

Master teacher and mentor teacher training models are based on learning from modeling. In these types of training modules, teachers who are "better than most" are chosen to demonstrate ways to perform discrete tasks related to lesson development, classroom interaction, feedback encounters, etc. Effective training programs use a relatively high amount of modeling because they reinforce learning by both imitation and incidental learning. The master teacher (or trainer) models both a situation-specific teaching practice and a professional attitude geared towards identifying the educational problem inherent in the teaching act along with appropriate problem-solving techniques.

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Learning to be a Decision-maker

The assumption is often made that ineffective teachers make irrational decisions and inadvertently choose to do things in their classrooms that are counter-productive. Research on classroom interaction challenges this belief. In fact, where teachers engage in up to one thousand interpersonal exchanges each day, the press of time dictates the development of myriad coping strategies. These strategies are typically both reflexive and reactive. Teachers are frequently unable to postpone decision-making until adequate information is available, and as a consequence learn to minimize the potential risk (a process known as "satisficing"). This means that potential alternatives may not be explored or even identified, and that potential benefits may also be minimized.

Recent research activities have focused on the teacher as decision-maker. Researchers working in collaboration with classroom teachers have developed strategies to make teachers more reflective about their own teaching. This reflection must include not only why they manage their classrooms as they do, but more importantly, why they are making decisions about content and how they are able to effectively monitor student understanding and achievement during the teaching process.

Teacher training programs must underscore the role the teacher plays as a facilitator in student learning. Learning is not a passive activity for either the teacher or the student and teachers must be taught how to make on-site decisions that enhance that process. Furthermore, it is important that teachers learn how they can use reflection in their own teaching as a metacognitive tool for self-evaluation. Ultimately, this empowers the teachers and makes them less vulnerable (and dependent) on a system in which support services such as evaluation and supervision are limited or non-existent.

Learning Means Sharing

With few exceptions, teachers are isolated in classrooms with little opportunity to interact with their peers and share about their work. Because of this, teachers tend to develop teaching techniques and approaches that are more idiosyncratic than individualistic, based on non-generalizable, trial and error experiences that occur early in the individual's teaching career and are generally resolved without consideration of a broad range of potential solutions. Furthermore, evaluation structures and incentives for professional advancement in the teaching profession, where they exist, tend to award individual merit and contributions rather than group efforts and initiatives. The interaction of these internal and external structures frequently serves to undermine professional networking, peer evaluation and team effort.

Evidence has shown that when structures are implemented to increase the opportunity that teachers have to interact and share about their work, the overall effectiveness of the program improves. This collaboration has been shown to increase teachers' repertoires of teaching strategies and their ability to respond to different learning styles. Teacher training programs are an effective way to introduce this teaching tool into the system.

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Collaborative teaching approaches are important for several reasons. First, they provide teachers the opportunity to identify strategies and approaches that produce results in the classroom. Secondly, and more importantly, as teachers begin to discuss and reflect, the static and often predictable templates of student/teacher interaction they have developed, are challenged. Teachers become aware of how much they control student learning and comprehension and how the teaching/learning environment is manipulable and responsive to a wide array of inputs and grouping arrangements (Cooper, 1990; Lanier and Little, 1992), including notably a much greater degree of problem-solving, student/student interaction.

Yet a caveat is in order. While most of the existing literature calls for development of less teacher-directed modes of instruction, with fewer instances of frontal teaching and a move away from traditional controlled environments, some researchers are calling for caution. Herriott and Firestone (1982) show that students from lower socio-economic backgrounds may be less responsive to alternative modes of classroom control. Stigler and Stevenson (1993) demonstrate that in many Asian classrooms, frontal teaching is not associated with any decrease in levels of student engagement. They counsel against dismissing more traditional approaches to teaching out of hand and suggest that the shared enthusiasm for and focus on learning may be more important than the particular mode of transmission used in the classroom. Certainly, the Asian school experience, with its large class sizes, its continuing traditions of respect for authority, and its tendency to favor group over individual objectives, must be considered relevant to the African experience, and is worthy of much greater study both by African educators and by the donor community.

Students

The key objective is to assist students to construct meaning and integrate relationships among what they are learning so that key concepts are clearly understood. This means that students need to be taught strategic learning processes and how to apply them. These processes include: (1) metacognitive strategies that help them monitor and understand their thinking processes; and (2) social interaction skills that allow them to work together effectively (Huntune, 1979; Renzulli, 1986; McCarthy, 1980; Ruenzer, 1982; Torrance, 1992).

Learning needs to build on children's natural curiosity and desire to explore their world. It must also engage students in issues that have relevance to their daily lives, linking new learning tasks to things already learned. Research on "flow", which builds on Maslow's concepts of peak experience and the need to discover one's potentialities and limitations through intense activity, has shown that activities that are "in flow" are intrinsically rewarding to learners and develop intellectual ability to the fullest. Flow activities occur when environmental challenges match a student's competencies and skills. In contrast, activities that are too easy create boredom and resistance, just as activities that are too difficult create anxiety and frustration. Consequently, students must have increasingly greater challenges to stay in flow (Fly-Jones, 1993).

Learning must also build on successes. Vygotsky's learning theory model demonstrates how children are assisted to successful completion and mastery of tasks. At the lowest level, learning opportunities are first developed that allow a teacher to control and guide the student's activity. This is followed by a period in which the teacher and student share the

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responsibility of completing a similar task. The final phase in the process is when the student assumes full responsibility for the task, thereby demonstrating mastery of the task (McNeil, 1992).

D. CURRICULUM AND EVALUATION

High-stakes testing (which is commonly used in Third World countries) has rewar that are directly and overtly linked to test performance. Because of this correlation, ther a close alignment between what is tested on the examination and what is perceived to b valued in the curriculum. However, this assumption is frequently flawed, as Moll-Druecker (World Bank, 1992) demonstrates in her study of content issues in Burkina Faso. What is tested is often not the kind of learning that is most needed. In addition, although high-stakes testing programs are often used as a tool to ameliorate the quality of the curriculum and instruction, research has demonstrated that it appears to have a negative impact on both teaching and learning.

Since high stakes evaluation frequently drives the curriculum, educational planners who want a curriculum that is oriented toward a function of identifying and selecting the most promising students, tend to develop evaluation instruments and forms of assessment that measure rote memorization and facts and information in isolation from a problem-solving/solution-seeking context. In contrast, educational planners who want a curriculum based on higher order thinking skills tend to develop assessment strategies that measure how well students are able to integrate interdisciplinary strands of subject matter and how well they are progressing towards an outcome that measures conceptual understanding. Ideally, multiple outcomes and skills should be assessed and information about proficiency across the subject areas should be made available (Capper, 1993; Madaus and Kellaghan, 1992).

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II. CASE STUDIES

A. COUNTRY STUDIES OVERVIEW

The goal of the country case studies was to observe ongoing curriculum development in selected African countries. Although a number of factors influenced final site selection (including accessibility within the limited time frame of the project, host country and USAID mission receptivity to host the project, and in-country political conditions), the three countries selected provide a unique overview of curriculum development taking place in Africa today.

Botswana has a long history of curriculum development and brings a rich perspective of what needs to be done and ways in which curriculum development can be achieved when certain critical conditions are met. In addition, Botswana is currently in the process of developing curriculum programs in varying degrees in all five key areas. In contrast, Senegal and The Gambia have both begun curriculum reform efforts more recently. They also highlight the collaboration between countries sharing common borders to address critical issues such as environment education. Furthermore, Senegal provides information about what is being done in curriculum development in francophone Africa.

Data collection occurred during all three visits. Two researchers spent 15 days in December 1992 collecting data in Botswana. Two additional visits, to Senegal and The Gambia, occurred in January 1993. The researchers each visited 1 of the 2 countries for approximately 10 days.

Because of the time constraints for in-country visits, data collection and interviews concentrated on the following: (1) officials in the Ministry of Education and related ministries who were likely to have direct knowledge of processes and curriculum related to the critical topics; (2) curriculum developers and curriculum development centers; (3) teachers; (4) students; (5) parents; (6) representatives of NGOs and voluntary organizations; and (7) local magistrates/members of governing bodies. Although these people were often quite knowledgeable about curriculum and schooling, frequently they had limited knowledge and scarce data on the costs of programs.

B. BOTSWANA

Background Information

Botswana gained independence in 1966 and is a multi-party republic with a parliamentary government. Approximately 76% of the land-locked country is rural; over three-fourths of the land area is covered by sparse savanna-type vegetation. Botswana's full mineral resource potential remains unknown, but large deposits of diamonds, nickel-copper, and coal have been found and provide a major source of gross national product (GNP). Some of the largest

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diamond deposits in the world are located in Botswana and the country has recently begun to stockpile large amounts of diamonds. With almost 2.8 billion dollars in foreign exchange reserves, a striking juxtaposition of no debtor nation status exists against the backdrop of large numbers of the population living in poverty conditions.

Gaborone, Botswana's capital city, is one of the fastest growing cities in southern Africa. Despite a rapidly expanding private sector, men in rural areas cannot find work. Historically, large numbers of men from Botswana migrated to South Africa to work in the mines. Today, many men continue to migrate to large cities, including those in South Africa, searching for employment. The absence of men has had a dramatic sociologic impact on the culture of Botswana which can still be seen in the interaction of family units. Furthermore, women in the rural areas are left with the full responsibility of caring and providing for the children, frequently with limited means for generating income, a factor that has contributed to the poor living conditions.

Although agriculture accounts for only a small percentage of the GNP, it employs as many as three-fourths of the work force. Cattle raising is the chief agricultural activity and is dominated by a small number of households who own more than half of all of the cattle in Botswana.

Botswana's population, estimated at 1,202,000, is comprised primarily of eight Bantu groups. Despite a steady population growth rate of 8-14% (one of the highest birth rates in Africa), the country has remained sparsely populated because of the shortage of water. The southeast is the most densely populated area in constrast with areas in the west-central and southwest which are virtually uninhabited. The majority of the people are Christians, with a large mixture of African traditional beliefs. Nearly 84% of adults are literate.

Health conditions are poor; however, health care is free to children under 11 years of age. Infant and childhood diesease continues to be a problem despite the free health care and infant mortality rates remain high. STDs and HIV/AIDS infections are rapidly spreading. Although they are not yet at epidemic levels, there is growing recognition that understanding about the diseases must increase and patterns of behavior must change. There are growing tensions between the traditional and progressive movements in Botswana, with increasing societal pressures driving the education system to take a more active social role.

Tension between the more traditional subservient role of women and the modern trends toward gender equity also exists. Autonomous decision-making is increasingly seen as a necessary skill for both girls and boys, men and women. Developing creative problem-solving skills that better prepare students for the world of work and entrepreneurial enterprises, is also recognized as an area that the school system as a whole must address.

Although democratization and privatization do not emerge as high priorities in discussions as areas for curriculum change, recent efforts to marginally include these issues in the more recent curriculum development signal a change in the focus of the education program. Democratization and privatization may come together as concerns directly tied to health, environment, and population. These also have a significant impact on women since the economic and legal well-being of women is directly related to both these issues.

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Portrait of Education

Botswana has one of the best developed educational systems in Africa. It has an excellent Education Management Information System (EMIS) which provides a wide range of data to educational planners. It also has a cadre of well-qualified teachers at both the primary and secondary level--among the most highly qualified in Africa. Although a large percentage of foreign expatriots taught in the system, particularly at the secondary level, recent efforts to nationalize the teaching staff have dramatically reduced the numbers of non-citizens teaching in the school system. Free education was introduced in 1980 which was a significant factor contributing to near universal primary and junior secondary school attendance.

The legacy of the British educational system is still very evident both in the curriculum and teaching practices. In addition, all secondary school students are required to sit for the Cambridge General Certificate Examination before leaving school. However, recent efforts to reexamine the most appropriate education needs for Botswana students, have led educational planners to challenge many of the educational practices and content inherited from a colonial educational system and to enter a period of educational reform that includes the development of new curriculum and a new format for basic education.

In order to determine priorities for reform initiatives, a full-scale needs assessment was being conducted in the spring of 1993--the first in over 15 years. This willingness to challenge the status quo, to be responsive to outside, real life situations and problems, and the comprehensive effort to consolidate basic education, is the most striking characteristic of the Botswana education system.

Some of the major objectives that had been identified were to provide educational opportunities to disadvantaged children including special needs and disabled children, children living in remote areas, and those representing smaller language groups. The move to implement criterion referenced testing is underway and will also be a significant forthcoming change in the education program.

Other critical changes in the sector include the move to achieve universal primary and junior secondary access by the end of the decade. There are also initiatives to move toward a child-centered pedagogy in the early grades and a performance-based curriculum. Preliminary feedback on this move seems to indicate that language diversity and medium of instruction will become important concerns.

In order to more effectively respond to pressures from both outside and within the education system concerning changes in the program of studies, a framework and process for curriculum development and reform has been created. Salient features of this decision-making practice are: (1) centralized decision making; (2) shared responsibility for deliberations on policy change; and (3) local rule over all matters related to the building and maintenance of schools.

The process requires good articulation between the Ministries and an assumption that all stakeholders have a voice in the process. Therefore, careful attention has been given to institutionalizing opportunities for input which has been framed around the traditional *kgotla*

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in which communal concerns are heard in an open meeting headed by a small group of men. More recently, women are included in updated versions of the *kgotla*.

Policy decisions are made at the national and local levels. Curriculum and standards are set nationally. Local decisions range from site selection for schools, buildings, and materials to input into disciplinary action for teachers. At all levels, there is a careful respect for accommodating input from a variety of sources which can make it less clear where initiatives for change originate.

Summary of the Critical Issues

The key issues affecting the education sector in Botswana relate to the particular characteristics that distinguish this country from most of its neighbors, i.e., that it is relatively well-endowed in terms of natural resources but hampered by relatively low human resource capacity. Since educational research has consistently found only a marginal relationship between expenditures on physical inputs and subsequent learning outcomes, the most promising area for Botswana in terms of qualitative improvement of its overall educational system in the medium and long-term must be seen as the potential for investment in developing its human resource base. Decisions in the short- and medium-term will need to focus on issues of in-service training, instructional leadership, regional/central allocation of responsibilities for sectoral management, curriculum content and evaluation, and the role of the school in determining culturally appropriate ways to address the evolving roles of women and rural populations. Of lesser importance in the particular context of Botswana, though still significant, are decisions relating to subsectoral resource allocations between primary, secondary, and tertiary education, the level of non-salary expenditures on teaching and learning inputs, and greater attention to budget preparation, monitoring, and execution.

The implications for curriculum development are particularly important in terms of human resource development. New curricular approaches must increasingly be seen as a means to stimulate reflective thinking on the part of teachers, and should be integrated with new in-service training modules. Curriculum content should reflect broad input regarding the role of previously marginalized groups. It should emphasize an integrated, cross-subject, holistic framework geared to maximize the impact of subject matter learning on all student learning. It will be particularly crucial over the next few years to develop feedback loops to provide much more detailed and timely information about curriculum implementation. Consideration should be given to developing pilot schools or providing competitive small grants to reflective practitioners within schools for this purpose.

Curriculum Decision-making

The curriculum change process has several steps: (1) an idea is conceived, frequently introduced from the donor community[1] or as a result of observations and advanced training

[1]For instance, since 1980, USAID has undertaken three comprehensive efforts to assist the government of Botswana improve their education program (the Primary Education Improvement Program [PEIP], the Junior Secondary Education Improvement Project [JSEIP], and the Basic Education Consolidation Project [BEC]).

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of an officer in the Ministry of Education; (2) subject panels are convened which consist of representatives from curriculum development, teacher education, primary education officers, and teachers; and, (3) curriculum developers write and pilot test the new materials.

Communication between departments within the Ministry of Education at the national level is very good. However, although rapid integration of policy and pedagogical initiatives throughout the education system is well-supported, it was noted that frequently it is not well-documented.

Although curriculum decision-making is centralized in the Ministry of Education at the national level, the process allows for substantive input from subject area specialists, teachers, and other ministries (i.e., Ministries of Health and Agriculture for topics related to health and the environment). Various approaches are used to get input from a wide range of interlocuters. One approach is that Chief Education Officers for junior secondary education, teacher training, and primary education confer regularly, for the purposes of planning and informally discussing issues which include formative assessment of curriculum and pedagogical innovations as implemented in classrooms. Another method takes place during teacher training sessions. Regional Education Officers also train teachers to help students develop projects, many of which focus on the environment. This project method is a child-centered pedagogical approach being encouraged by the Ministry of Education divisions for junior secondary education and teacher training, and provides a mechanism for teachers and students to manipulate the curriculum within the local setting. Regional education officers, however, report frustration over having to wait for clarification on how to assist teachers in defining curricular and program innovations in their classrooms.

The Environmental Education Conference convened in 1991. Included among the activities for this workshop were: (1) plans for integration of content on the environment into education at primary, secondary, and tertiary levels; (2) specific recommendations for curriculum content; (3) plans for linking health education and rural development; and (4) specific recommendations for teaching methods in formal and non-formal education.

Lessons Learned

Many education programs for children ages 5 to 19 emphasize distributing information to young people. After talks with students, teachers, and parents, it was determined that information dissemination efforts are likely to raise awareness, but they fall short of inducing behavioral change. Efforts to control the spread of AIDS and the rate of population growth in Botswana rest now on behavioral changes that are inconsistent with prevailing culture and tradition.

Gender is an important factor in all areas, including health, environment, and population. In addition to their role in reproduction, women and girls are often engaged in activities directly affecting the environment since they are chiefly responsible for gathering wood for cooking and supplying other needs of the household. Employment patterns of men in Botswana (who

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follow rural to urban migration patterns) often leave women as the sole head of household in rural areas. Modern law and longstanding traditions in Botswana render women economically vulnerable.

STDs, including HIV/AIDS, are a risk for many women and girls facing limited social and economic options. Education for both women and men will suffer until issues of equity and access are fully addressed under the law for both sexes. This does not appear to receive adequate consideration under current law. There are a number of NGOs whose efforts complement formal schooling, and who are taking on the empowerment and education of women as their basic goals. These include such groups as the YWCA, Association of Women Lawyers, and the National AIDS Prevention Programme.

Current efforts to more fully integrate critical topics such as those discussed above into the curriculum are both hampered and helped by the inclusion of a program called Family Life Education in the curriculum of all junior secondary and full secondary schools, and by the fact that items on health, environment, and family life education appear on the Primary School Leaving Exam. These existing programs are potentially helpful in that they provide a socially acceptable framework for inclusion of sensitive, but highly relevant topics for an age-appropriate cohort of students. On the other hand, they currently serve to impede the efforts of health educators and social workers since a curricular tradition has already developed in which many vital topics may be simply omitted. Although teachers are trained in the newly developed curriculum materials in these areas, they are frequently uncomfortable with the area of the curriculum that teaches about reproduction and STDs. Occasionally, they may designate another teacher in the school or call on health care educators to teach these topics, but these are individuals who are unlikely to have the same level of training in the implementation of the curriculum materials. The result has been highly skewed implementation of the intended curriculum.

The difficulties encountered in implementing the Family Life Education program are a microcosm of the difficulties inherent in all curriculum innovation. New and unfamiliar themes tend to be received with suspicion and reluctance by practitioners. New concepts couched within traditional, or at least widely-shared, existing curricular frameworks tend to become overwhelmed by the burden of previous knowledge and understandings and are distorted, often beyond recognition, from the earliest days of implementation.

NGOs and non-formal activities provide a valuable service for information dissemination in the community. Possibly their impact is even greater than the formal education system. Wildlife clubs operate in schools as extracurricular activities which bring teachers and students together to clean up villages, or develop and carry out projects meant to protect or enhance the environment.

The Botswana education system has the dual advantage of having qualified education officers and teachers placed throughout the country, and good facilities in regional headquarters available for teacher support and training.

Training received by Education Officers is reported as being a catalyst for the development of new programs or innovations within the Ministry of Education. Providing access to training

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on the issues of health, environment, and population is one step to mobilizing the formal education sector to address the issues. The training should focus not just on the issues, but also on ways of building capacity to address these issues within the formal education sector.

Past donor efforts to mobilize the formal education sector to address critical curriculum issues appear to have focused on developing discussions with individuals at the highest levels of the Ministry of Education in a "persuasion" mode. While the support of top-level officials is important, this form of "trickle-down," externally driven reform is inefficient, unsustainable, and unlikely to result in identification of the country-specific innovations most likely to respond to Botswana's particular needs. On the other hand, innovations with a proven track record such as the Primary Education Improvement Program and the current Basic Education Consolidation project appear to have built shared understandings among sectoral personnel and may provide a solid basis for more in-depth discussions in this area.

C. THE REPUBLIC OF THE GAMBIA

Background Information

Stretching inland 295 miles eastward from the Atlantic Ocean, The Gambia is a narrow enclave 15 to 30 miles wide along the Gambia River and is almost completely surrounded by Senegal. Only about one-sixth of the country is arable. However, agriculture accounts for more than one-fourth of the GNP and employs more than three-fourths of the work force in subsistence farming. The market economy is largely based on the production of peanuts and commercial fishing since there are few other resources in the country. Because of this, The Gambia has one of the lowest GNP per capita in West Africa. Yet, despite the difficult economic situation, it is a stable democracy located in a region that is plagued with civil unrest.

The population is estimated at 860,000. It has an annual population growth rate of 3.4%, among the highest birth and death rates in West Africa and the highest infant mortality rate in West Africa. The country is populated by diverse ethnic groups. About two-fifths of the population is Malinke, followed by Fulani (one-fifth), Wolof (one-seventh), Diola, and Soninke. The country is 95% Muslim and religious leaders and Koranic law have a dramatic impact on both private life and public laws; they also play a critical role in educational policy development.

Deforestation, drought, soil erosion, and the increasing salinization of the Gambia River have brought environmental concerns to a state of crisis. Because of the large percentage of the population that relies on agricultural production for survival, problems in the environment have created a crisis in food production. The demand for food in the country regularly outstrips the food supply capacity and food deficits persist.

The Gambia Environmental Action Plan (GEAP) developed in January 1993, represents a multi-year, multimillion dollar collaborative effort with the donor community to slow degradation of the environment and to explore the potential for development of the environment as a resource base.

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Although environmental factors are critical issues, they aren't the only pressing need. HIV/AIDS is fast becoming a major concern. It is estimated that there are 14,000 cases of HIV today in The Gambia. However, skepticism exists about the disease and few people outside of those actively involved in the fight against the spread of the disease view AIDS as a critical situation. Overall, health conditions are extremely poor and diseases such as diarrhea and malaria are among the acknowledged critical health issues. The lack of an adequate number of health care facilities complicates efforts to improve the health conditions of Gambians and contributes to one of the lowest life expectancy rates (43 years of age) in Africa.

Portrait of Education

Education competes for limited government funds with priorities that have to do with food security, environmental degradation, and diminishing natural resources. These issues are perceived as the critical concerns for The Gambian government. Consequently, education is under-resourced, underutilized, and unequally distributed since schools with trained teachers, especially at the primary level, are not available in most areas of the country outside of Greater Banjul. Koranic schools are an important source of basic education, especially in the rural areas. However, enrollment and attendance in Koranic schools are not included in government totals apparently because the government-defined curriculum is not completely implemented in these schools.

Recently, there has been a growing awareness that education is a valuable mechanism through which survival issues can be meaningfully addressed, and efforts are currently underway to create an educational program that is more responsive to societal needs. The Republic of The Gambia (ROTG) has formulated a fifteen year education policy declaration that continues through the year 2003. This policy calls for: (1) increased access to education; (2) improvement in the quality of education; and (3) relevance of the program of studies with tighter linkages between the curriculum and The Gambian situation. In addition, the target is to attain an overall enrollment ratio of 75% by 2003, with an emphasis on increasing participation for girls.

Although the core subjects are English, math, science, and social studies, plans are to include population, HIV/AIDS and environment issues in the curriculum. Under the new plan, science will be integrated and will include the areas of biology, physics, chemistry, and health science. Agricultural science will be a separate but compulsory subject taught in the middle school. Health, environment, and population issues are planned to be integrated into the curriculum starting with the upper primary grades ~~and in~~ the middle school.

Illiteracy rates are high and school attendance and enrollment rates are low. The adult literacy rate is 25%: with 36% for males and 15% for females. There are serious discrepancies in enrollment rates by gender and by region. In rural areas, a lower proportion of school-age children go to school and most children outside of Greater Banjul and the Western Division are not in school. The situation is most serious for girls, for whom a large percentage in rural areas never enroll in school.

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As Figure 1 shows, the gap between the school enrollment rates for girls versus that of boys widens in the rural areas. Although there are many constraints that impact school attendance, the need for children to assist with agricultural production is a major factor that competes with school attendance. Girls are particularly at risk to become school leavers since they are frequently needed to care for their siblings and assist in household work. Another significant factor influencing girls' participation is the pressure to marry and begin a family. Despite legislation against early marriage, girls in certain parts of the country continue to leave school at puberty to prepare for marriage. Both religion and the status derived from bearing many children has a significant impact on girls' schooling patterns.

Rapid population growth has been a major factor in the persistent low rates of school enrollment. Despite considerable expansion in primary school facilities, and the abolition of primary school fees in 1976/77, an increasing number of children of primary school age have been unable to gain access to education. The overall number of children in school has increased in the last decade, but has failed to keep pace with increases in the school age population.

It has been estimated that an additional 74,000 places would have to be created in schools to accommodate current levels of school age children if fertility levels remain constant. This would require a near doubling of the 1988 primary school capacity, an effort that would place severe strain on an already overburdened and under-resourced sector.

Figure 1

GROSS ENROLLMENT RATES AT PRIMARY LEVEL, BY SEX AND REGION REPUBLIC OF THE GAMBIA, 1988

	Boys	Girls	Both Sexes
Region I Banjul, Kombo, St. Mary	98	80	88
Region II Western Division	97	68	83
Region III Lower River, North Bank	71	38	56
Region IV Kuntaur and Georgetown of MacCarthy Island Division and Upper River Division	43	23	34

Source: Ministry of Education, 1989

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Summary of the Critical Issues

A redesigned basic education structure went into effect in September 1992. The current structure has a primary level comprised of grades 1-6. The first three years after primary school are defined as upper basic education. The newly reorganized education system emphasizes the importance of vocational education. Parents are often reluctant to have their children enrolled in agricultural science and vocational education classes because they don't want their children to be "just" farmers. In addition, children are hesitant to remain on the farm or in rural areas where conditions are known to be hard and the payoff from agricultural production is meagre.

In The Gambia, as in many countries, a traditional "academic" program is highly valued and parents are anxious that proposed changes in the curriculum not lessen the value of the program of studies or subsequent degree. Because of this, educational planners have been challenged in their efforts to develop a curriculum that is responsive to societal needs and relevant to the students' life experience while at the same time being responsive to the parents' concerns.

Another problem facing educational planners is how to develop a curriculum that is equitable with regards to the various language groups represented in the country. Although there are several indigenious languages, including Madingo and Wolof, English is the medium of instruction in most grades except for some maternal language instruction in the lower primary grades. Middle school teachers complain, however, that students who do not receive all their schooling in English have difficulty communicating effectively in English. This becomes an important issue because of the role that English has as a gatekeeper to access to higher education and high status jobs.

Curriculum Decision-making

Despite an elaborate consultation process into which many groups of education stakeholders are drawn (teachers, religious leaders, trade unions, parents, curriculum, and research center staff), education decision-making in The Gambia is highly centralized. However, participation of a wide circle of stakeholders is encouraged and the Ministry of Education asks religious groups, trade unions, and Parent-Teacher Associations to come together to form a consultative group to advise them on such things as curriculum development. The group delegates work to a small task force, whose responsibility it is to develop a policy document. From the document a request for organizational or curricular change is initiated. The proposed change then becomes a directive for the entire country.

New curriculum materials were scheduled for phased introduction into schools beginning September 1993. The development and production of these materials was supported, in part, by the World Bank. The materials are colorful, clearly written, and supported with equally clear teachers' books. The texts propose redefined roles for teachers and students and underscore a number of new assumptions about teaching and the relationship between teachers and students. These materials assume that instruction is student-centered and

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interactive. Lessons are designed to be much less teacher-directed and include no lecture topics. There are many structured assignments calling for student reflection and problem-solving.

The program of studies and materials are developed in two phases. During Stage 1, subject panels are convened at the Curriculum Development and Research Center (CDRC) which is a technical arm of the Ministry of Education. A panel is comprised of one to two people based at the CDRC who work with a group of specialists from the subject area, including teachers.

For instance, a panel making decisions about environment as a topic in the curriculum may consist of representatives from the Water Development Unit, the Ministry of Health, primary and secondary school teachers, and NGO representatives. Teachers at the primary and secondary levels are on every panel. The subject panel interprets what educational policy says about the subject. During Stage 2, one or two people from the Curriculum Development Unit write the new materials.

All new curricular programs and materials, including a precise breakdown of units into lessons and evalaution materials, are pilot tested before being produced for implementation throughout the country.

Population and Family Life Education (FLE-POP) is currently being introduced into government schools. The studies are being introduced as a project through "carrier subjects"--science, social and environmental studies, and home economics. In late 1992, the Ministry of Education carried out baseline studies surveying a large group of stakeholders about their thoughts and attitudes on population issues.

The study conducted by the Ministry of Education, targeted teachers, religious leaders, parents and students throughout all regions in the country, and requested information about what they thought should be taught in the school curriculum including controversial topics such as sex education and female circumcision. Part of the impetus for conducting this study was because of concerns over developing a program of studies dealing with issues that addressed family size and polygamy in a country with strong Islamic influence. However, despite concerns that these issues would not receive strong support for inclusion in the school curriculum, the research demonstrated that parents and religious leaders were generally supportive and had confidence in the teachers to take the appropriate action.

The development of population/family life curriculum materials for the government schools are being modeled after a program of study that has ~~been~~ used for several years in St. Peter's Technical High School a Catholic School in Lamin. ~~The~~ Family Life Education curriculum, complete with elaborate printed materials, emphasizes the roles and responsibilities of individuals within families and carefully incorporates personal decision-making about health, hygiene, and the environment into lessons about classic, grade-appropriate science topics.

Students at St. Peter's talk about valuing decisions that protect the environment and the quality of their own lives. Feedback from students about the program seems to indicate that

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the program is having a positive impact on changing their behavior. Conversations with a class of Form II students, showed that they are considering delaying marriage and limiting family size to one or two children.

New curriculum materials for primary and middle schools emphasize health and environment in science and social and environmental studies texts. Materials were scheduled for phased introduction into schools beginning September 1993. Another innovation being introduced into the science program involves teachers in primary, middle, and secondary schools to coordinate the development of school farms and gardens. The program successfully integrates health, environmental education, agricultural science, and community development in a farm/garden project. Each school is provided with seed and the technical expertise and equipment necessary to plan, irrigate, plant, and harvest a variety of crops. Teacher training includes sections that meet specific school needs (i.e., planning for irrigation needs). Teachers are trained at Gambia College and by a team led by United Nations Children's Fund (UNICEF) technical experts. Training in Protection of the Environment (T.I.P.E.) is another innovation that is a school-based intervention in curriculum development.

Factors that Promote and Constrain Curriculum Change

Developing a cadre of well-qualified teachers remains a critical need. Currently, 57% of all teachers are trained. Most untrained teachers are at the primary school level. The government has begun a massive effort to upgrade teacher credentials; the target year for all teachers to be trained is 1996.

One approach the ministry has taken to improve the quality of instruction has been to establish teacher resource centers in each of the 5 regional headquarters. These centers were created with the primary purpose of providing support to teachers for the production of materials and for in-service teacher orientation courses. Additional, teacher training takes place in Banjul in large, central sites such as Gambia High School.

In-service teacher education is also highly centralized. Teaching and the use of materials varies greatly by region, particularly as one moves from the Greater Banjul area into the Eastern Region which is a more rural and less populated area. A multiplier approach to in-service teacher training is used. Regional education officers receive training enabling them to work with head teachers. Head teachers are responsible for the in-service upgrading of teachers in their own schools. Pre-service teacher training appears to be only loosely coupled with Ministry of Education pedagogical innovations and curriculum materials.

Despite efforts to upgrade the teaching workforce throughout the country and improve the quality of instruction and teacher morale, working conditions, especially for primary school teachers are poor. Salaries are low, often less competitive than clerical positions in the urban areas. Quality housing is scarce, particularly in remote areas, and modest government allotments for housing do little to remedy the situation. Because of these factors, attrition is high. This mitigates the impact of training efforts, however well-conceived and otherwise effective. It is generally believed that private school teachers are more highly trained and better paid, and that the workforce in private schools is more stable than in government schools, although the present study was not able to provide independent verification of this.

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Further studies will need to be undertaken in order to determine the potential for the private sector to play a greater role in the design and implementation of curriculum innovation.

Activity in the non-formal education sector may be leading the *way with respect to actively* working on raising awareness and changing behavior of youth and adults. Gambia Family Planning, the Society for Women in Africa Against AIDS, Peace Corps, Voluntary Service Organization (VSO), UNICEF, Women in Development, Action Aid schools, Save the Children, US/England are among NGOs and voluntary organizations working and experiencing some success in these areas.

Radio Gambia has produced a series of dramas meant to educate and to raise awareness about health and population issues. Radio Gambia also broadcasts scripted lessons based on curriculum materials written by the Curriculum Development and Research Centre of the Ministry of Education. The dramas were successful and often compared to television soap operas in the United States. The lessons drawn from the curriculum, however, were seldom heard by the students who needed them most--students in remote areas and without trained teachers.

Radio Gambia is also developing a series of radio dramas focused on AIDS and health education. Radio scripts are written in collaboration with the Ministry of Public Health, Family Life education curriculum specialists, and the Catholic Mission. The plan is to broadcast series in English, Mandingo, and Wolof. This is the second series of such dramas produced by Radio Gambia. It is hoped that the new dramas can build on the widespread success of the first series of dramas.

Peace Corps has developed a plan drawn in conjunction with the Gambian government that now focuses in part on integrating environmental education across the curriculum. Peace Corps has invested in training new and continuing volunteers on how to implement a government policy of teaching by using projects in the context of topics on the environment. Peace Corps trains its volunteers to teach in middle schools. The environmental education component training is 4 days long. There is a needs assessment, a 6-step design for environmental education, and, after 3 months, specific training on integrating environmental education into math education.

D. SENEGAL

Background Information

The following background information summarizes salient demographic and socio-economic characteristics of Senegal which currently have an impact on the lives and schooling of children and youth. Briefly, those conditions which have bearing on the integration of health, population, and environment into the school curriculum are:

- a deteriorating economy, resulting in reduced funding for schooling and social services, high unemployment--especially of youth--and poor child health conditions;

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- a deteriorating environment, resulting in increased poverty and substandard quality of life;
- high population growth with its concommitant pressures on the environment, the economy, government and social services, and high dependency rate;
- highly centralized and costly bureaucratic administrative structures resulting in s ow, unresponsive and, often inappropriate and ineffectual, decision-making;
- high illiteracy and low school attendance rate, resulting in an inability to respond to Senegal's social and developmental needs;
- important gender inequities in all areas of social, cultural, and economic life; and
- the increasing threat of HIV/AIDS.

Since achieving independence in 1960, Senegal has been socially stable and politically democratic. However, rapid population growth, a deteriorating economic base, and severe environmental degradation pose serious problems for Senegal's social, political, and economic future. The country's major sources of revenues--peanuts, fishing, tourism, and phosphate mining--are in decline.

In spite of substantial foreign assistance (15% of GNP), per capita income in Senegal has remained virtually unchanged since independence as a 2.9% population growth has offset economic growth of 2.4%. While a minimum weekly wage is guaranteed at $27 per week, cost of living is estimated at $36 per week. Unemployment and underemployment continue to rise. Although unemployment is difficult to define because a significant portion of the population is partially or precariously employed, 1991 unemployment is estimated at 23.5%.

Since 1983, major structural readjustments, undertaken with the support of the World Bank and other donors, have resulted in severe cuts in government spending on social services: from 653 FCFA in 1978/79 to 427 FCFA in 1988/89 per capita on health services, and from 2,268 FCFA in 1978/79 to 1,841 FCFA in 1988/89 per capita on education. The Human Re:ources Development Project (HRDP), a major project developed by the World Bank, foresees budget increases for health and population to 7% in 1995 from 4.8% in 1988/89.

Most sources place the population of Senegal in 1990 at about 7.5 million, with an annual growth of about 3.1%. Roughly 58% of the population is under 20 years of age. The majority of the population is rural but urban migration proceeds at a rapid pace and is currently placed at 36% with a 4.6% growth rate. Given Senegal's weakening economy and diminishing natural resources, these demographic trends, if unchecked, will pose serious problems to already overburdened social services, especially in health and education.

Structural readjustment has resulted in substantial reductions of funds to education. The percentage of the national budget to education was reduced from 23.1% in 1985 to 19.7% in

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1990 (MEN, 1990). Historically, the education sector has benefitted very little from outside assistance and donor agencies have not engaged in a concerted effort for educational improvement.

The decades of drought in the Sahel region, coupled with high population growth, have put severe pressures on the physical environment in Senegal. Desertification, deforestation, and inappropriate agricultural practices have seriously deteriorated Senegal's already fragile natural resource base. Improved conservation, and more effective exploitation of the limited agricultural resource base, are critical elements to sustainable development in Senegal.

Although public awareness of environmental issues appears to be growing, along with greater determination on the part of the Government of Senegal and donor agencies to address these issues, there seems to be little consensus on definitions of what constitutes "environment." Linkages among population growth, AIDS, environment, and gender issues appear to be weak.

The public sector in Senegal is characterized by a large, well-established bureaucracy and highly centralized administrative control, characteristics shared by its francophone neighbors and inherited from the French colonial period. *Dirigisme* and top-heavy hierarchy still dominate the decision-making process, limiting the influence of the private sector and community-based initiatives.

The costly maintenance of a huge state bureaucratic infrastructure saps government resources. Although decentralization and reduction of the bureaucracy are major policy goals of the Government of Senegal, implementation of these objectives is slow and politically difficult to execute. Major obstacles are historically powerful and politicized unions (syndicats) and, at the local level, the high illiteracy rate and inexperienced management.

Marabouts, traditional religious leaders, play a key leadership role in local communities as well as at the national level. Islam in Senegal is organized into three principal Moslem brotherhoods and most of Senegal's 90% Muslim population is affiliated with one of these brotherhoods. Leading the brotherhoods, the *marabouts* are both spiritual and temporal leaders, and exercise significant influence at all levels of Senegalese life. They are able to mobilize public opinion, land, labor, and capital. Support of the *marabouts* is essential to any undertaking in Senegal.

A significant change for Senegal's traditional decision-making processes is the rapid growth of NGO activity. The number of NGOs has increased from 50 to more than 120. This would appear to signal more positive attitudes toward democratic values and local self-help and initiative. Unlike most other Sahelian countries, Senegal has NGO coordinating bodies and structures (CONGAD) in place, and a positive relationship has been established between the NGOs and the government, reflecting the government's policy of decentralization and the decline of state-sponsored support. The emergence of NGOs and their growing accumulation of experience and expertise hold promise for facilitating innovations and initiatives at the local level.

Senegal's social life is strongly influenced by conservative, traditional religious values. Socio-culturally, Senegal is a traditional, polygamous, rural, Islamic, ethnically diverse

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society. The influence of traditional leaders is strong. Although women participate at all levels of social and economic life (albeit primarily in the informal sector) and have equal legal rights, they have little decision-making power in a predominantly male-dominated social system. Lack of access to information and an 82% female illiteracy rate present serious obstacles to the welfare of women and children. Children are highly valued as symbols of fertility and represent a woman's social worth and status. Most Senegalese women, as well as men, desire more than the average 6.4 children. Infant mortality remains very high and, given the cultural importance of children, contraceptive use is correspondingly very low.

Children make up one-fifth of the population but they account for nearly 60% of all deaths. Over 10% die before their first birthday. Primary causes of child deaths are respiratory diseases, malaria, and vaccine-preventable diseases such as tetanus, meningitis, measles, and polio. One-quarter of all Senegalese children under age 5 suffer from malnutrition. Senegal ranks 112th out of 130 countries on the UNDP's "index of human development," based on per capita income, literacy, and life expectancy. (This is slightly higher than other Sahelian countries but lower than Haiti's rating of 101.)

The number of AIDS cases has risen dramatically from 149 declared cases in 1988 to 848 declared cases by December of 1992. Estimates of those infected range from 5% to 10% seropositivity for the population as a whole. While a National AIDS Prevention Committee was created in 1990, there is general agreement that there is still little public awareness of the consequences of the AIDS epidemic in Senegal. Testing for the virus is extremely limited and socio-cultural taboos about sexuality make the dissemination of information difficult.

Portrait of Education

Free, universal, and compulsory education has been the primary goal of education in Senegal since independence in 1960. Major education reform efforts (1969, 1979, 1984) set aims of promoting universal democratic education for all through the development of "specifically African" curriculum, addressing issues of equity (rural/urban, male/female), promoting instruction in national languages, and providing a better match between school curriculum, productive work skills and employment market needs. Few reforms have reached classrooms, however, and the basic structure of the school system in Senegal inherited from the French colonial era remains fundamentally unchanged today.

The French colonial education system served the dual purposes of training an elite corps of civil servants and teaching them French language and culture. Despite reform efforts, characteristics of this system, shared by most francophone African countries, remain a part of the organization of education in Senegal. These include:

- the language of instruction is predominantly French;
- resources are heavily concentrated in urban areas and in higher education;
- most resources are allocated to the formal school system (it is noteworthy that 0.4% of the Ministry of Education budget is allocated to basic education in literacy);

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- the education sector is part of the civil service (and, as such, protected by powerful syndicats);
- the purposes of the curriculum from the first year of school are to produce a male university graduate;
- curriculum content is academic and closely tied with the French Academy;
- instruction and pedagogy are didactic, teacher-centered;
- the system is exclusive and elitist rather than inclusive; and
- the system is conservative, with current social structures demonstrating an urban, male bias.

The literacy rate in Senegal is between 10% and 30%, depending on how the term is defined and how people are counted. This compares with a 25% literacy rate throughout the Sahel and a 50% literacy rate throughout Africa. The overall literacy rate in Senegal for women is estimated at 18% (UNICEF, 1992). Primary school attendance (ages 7 to 12) is estimated at 56.4%, with an attendance rate of 41.4% for girls (see Figure 2 for school attendance rates across secondary and higher schooling levels). Most girls attending primary and secondary schools live in urban areas. Enrollment rates vary significantly from urban to rural areas with nearly 93.2% of school-age children in attendance in urban areas in contrast to 34.4% in rural areas. Several sources suggest that the rates are as low as 10% in many rural areas. These enrollment rates are slightly higher than the Sahelian average but substantially below the average attendance for Africa. Class size averages 70 students per class in urban zones and 48 in rural areas.

Figure 2

SCHOOL ATTENDANCE RATES

COUNTRY OR REGION	PRIMARY		SECONDARY		HIGHER	
	Total	Girls	Total	Girls	Total	Girls
SENEGAL	56.4%	41.4%	14%	30.6%	2.8%	14%
SAHEL	52 %	N/A	11%	N/A	1.8%	N/A
AFRICA	89 %	N/A	30%	N/A	4.3%	N/A

Private schools represent an important part of the education sector. While 8.9% of primary students attend private institutions, these private institutions enroll 28.4% at the middle and secondary level. The vast majority of these schools are Catholic. Koranic schools (*Daaras*)

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provide an important role in basic education in Senegal through informal education traditional religious structures (Madiodio Niasse, USAID). Many parents, especially in rural areas, send their children only to traditional Koranic schools.

Koranic schools outnumber traditional schools by as much as ten to one in the countryside (Rideout, 1985). While the strict purpose of the Koranic schools is to teach religious texts, the *marabout* exercises considerable moral and behavioral influence and guides, informs, and controls all aspects of behavior of his Koranic students (*talibes*). *Talibes* must work for the marabout (often by street begging) and are expected to satisfy the physical and material needs of the *marabout*. Parents choose to send their children to the *daaras* for a number of reasons: (1) the lack of local public schools, teachers, and classrooms; (2) the inability of parents to support their children; or (3) the preference for a strict religious education.

Of particular significance for this study are the high rate of illiteracy, especially female illiteracy; the low rate of school attendance, especially for girls and in rural areas; and the importance of traditional religious structures in providing basic education.

Summary of the Critical Issues

Two major initiatives to integrate environmental and population education into the curriculum are currently being undertaken by the Ministry of Education: (1) the Training and Information Program on the Environment; and (2) the Population and Family Life Program. Both programs are in the early phases and no evaluations have taken place. Both programs have adopted the "multidisciplinary" model and aim at global integration of the topics across existing school subjects (rather than as separate and distinct courses). HIV/AIDS education and non-formal activities are also discussed.

Training and Information Program on the Environment (PFIE: Programme de Formation et d'Information pour l'Environnement)

Senegal's commitment to environmental education dates from the 1986 conference of CILSS (Comité Permanent Interétats de Lutte Contre La Sécheresse dans le Sahel: Inter-States Committee for Drought Control in the Sahel). At that time, CILSS directed its Sahel Institute, located in Bamako, to develop the Sahelian Education Programme as a complementary strategy for drought control through environmental education. The main purpose of the Sahelian Education Programme was to establish environmental education strategies, guidelines, and objectives for the member countries. The Training and Information Program on the Environment, or PFIE, is the primary school education strategy drafted in early 1990 by the Institute prior to the Rio Earth Summit.

In late 1990, the Ministry of Education created a special unit of INEADE (Institut National pour l'étude et l'action pour le développement de l'éducation) to research, design, and implement the elementary environmental education program in Senegal, PFIE/Senegal. Funding for the project comes from the European Community. A pilot curriculum was introduced in several schools in the Podor region in the north of Senegal in December 1991. Currently, 126 elementary teachers have completed the 22 day training and are implementing the program in 116 classes (representing 9,862 students). Another 225 teachers are being

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trained. In 1992, the Department of Middle and Secondary Education began work to develop a similar curriculum to pilot PFIE in 5 secondary schools in 4 regions. Two introductory regional workshops for selected secondary teachers and principals have taken place. A pilot middle and secondary level curriculum is planned for implementation in 1994.

Curriculum content and teaching materials for the elementary PFIE have been developed by the INEADE team with input from the Ministries of Rural Development, Agriculture, Environment, and parents, teachers, and community members. Materials have not yet been produced for the middle and secondary level. Subject matter and themes focus on the specific problems of desertification and drought in the Sahel, conservation of scarce water resources, and disappearing wildlife. There is very little attention to the interrelationship of population growth, health, and environmental degradation. Major health concerns such as AIDS are not addressed within the PFIE environmental syllabus.

Materials include a teacher's curriculum guide, student textbook, and student workbooks. The student text is lively and interesting, well-illustrated and well-developed and contains many problem-solving activities that require students to explore and interact with their immediate environment. Of note are the program's operational guidelines as outlined by Oumar Sy, PFIE Director in Senegal: (1) it is possible to radically change the way students learn; (2) it is possible to open schools to the community and the milieu; (3) it is possible to bring non-school personnel into the school (health workers, foresters, farmers); and (4) it is possible for students and teachers to create programs better adapted to their needs if left alone by the authorities.

What is significant is that the PFIE materials and program guidelines assume the following: (1) pedagogical approaches depart significantly from current practices in Senegal; (2) these new programs do need to be included in the national exam system; (3) there should be greater teacher and community participation in curriculum decision-making than is provided for within Ministry system; and (4) there must be substantial teacher in-service education. There is, however, little evidence that these assumptions are articulated or reflected in overall strategies of the Ministry of Education and program staff complain of lack of coordination and commitment from the Ministry.

Population and Family Life Program

Efforts to integrate family life and population issues into the school curriculum followed the 1988 U.N. Population Declaration and coincided with UNICEF's regional focus on population issues. In 1989, with funding from the UNDP, the Ministry of Education created a permanent special unit (Projet éducation à la vie familiale et en matière de population) within the INEADE which was charged with design and implementation of the Population and Family Life Program by 1995. The project is still in its developmental stages: phase 1 of the project (October 1990 to December, 1992) worked on project design, research, preliminary curriculum objectives, and some teacher training. Phase 2, to be completed in January 1995, will focus on curriculum design, materials production, and piloting in selected elementary schools. Phase 3 aims at full implementation into the national curriculum at all levels.

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The preliminary curriculum contains 4 main thematic strands: population and family life; health; environment; and migration patterns. These strands are intended to be integrated across the curriculum into existing school courses, mainly social and natural sciences. In contrast with the PFIE, population issues seem to be more broadly defined in terms of the relationship among population growth and all aspects of social, economic, and cultural life, including family life and environment. The INEADE team is currently developing curriculum objectives from data collected through surveys and public hearings that included community members, parents, and students. As a result of the public hearings, objectives will aim at getting facts and information to students. While the INEADE team recognized the need for strong early intervention to influence student sexual values and behavior, team members recognize that parent and teacher resistance to sex education, especially in primary school, limits the role of the school. Thus, they are working with the Ministry of Youth (Ministère de la Jeunesse et du Sport) to develop out-of-school programs which will complement the in-school curriculum.

HIV/AIDS Education

The Ministry of Education has mandated the integration of HIV/AIDS education into natural sciences courses in the last two years of secondary school. There is no mandate to introduce HIV/AIDS education at the primary level, reportedly because teachers and parents deem it inappropriate for young children. No curriculum has been developed and no objectives on AIDS education were available at the Ministry. There is some evidence that private Catholic schools have introduced AIDS education at the middle school level. The classroom treatment of AIDS education appears to be limited to the distribution of brochures (published by UNICEF and Environment and Development Action in the Third World (ENDA) and lecture presentations on transmission and prevention. No information is available on the effect of AIDS education on youth behavior.

Non-formal Activities

Although no first-hand observation was made during research, there appear to be a growing number of educational initiatives on AIDS, family planning, and environmental issues being undertaken by NGOs and private voluntary organizations (PVOs) (see Summary of Selected Programs in Section III). Many of these efforts seem to use peer teaching and counseling or a project/activity-based approach. Coordination with schools, youth groups, parents, and communities are major objectives of almost all these programs, although as yet there seems to be little interfacing with NGOs on the part of the Ministry.

Curriculum Decision-making

Policy decisions and decisions on the aims, goals, objectives, and content of the curriculum are made almost exclusively at the national level. Although in theory the 1984 reform effort contained structural readjustments to decentralize in favor of departments and regions, in fact, even minor decisions are still made in Dakar. Ministerial decisions are communicated to schools through field-based inspectors who are responsible for evaluating performance and compliance and providing support to local schools and staff. However, poor roads, lack of spare parts, and lack of funds for fuel mean that locally based inspectors do not play an

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active role and communication between schools and the central administration is very weak. Lack of school-based input and poor communication between the ministry and local schools were noted by many sources as major barriers to effective, sustainable curriculum reform efforts.

Local participation is generally limited to school construction. Under recent reforms, parents and communities are expected to make greater contributions to education costs. Parents and communities construct 40% of new classrooms in Senegal (shortage of teachers, however, means that many new classrooms stand empty) and, although in theory textbooks and supplies are furnished by the government, in reality a significant portion of expenses for transportation, uniforms, and materials is born by parents. A number of sources interviewed suggested that parents do not perceive formal education as a means to improve the lives of their children. For example, on a recent KAP survey on natural resource management (USAID/NRMS Project), no one said "build a school" as a way to improve conditions. Education is not seen as a way to get things done. Reasons for this may be the low literacy rate, costliness of schooling, lack of instruction in national language, religiously motivated mistrust of lay education, and instructional approaches that discourage students.

Changes in curriculum are usually initiated at the ministerial, national, or international level. Standards are set at the national level by the Ministry of Education. The 1984 reform effort ("The New School" [L'Ecole Nouvelle]), and the PFIE, give a representative overview of the way in which curriculum changes are made and implemented. The following steps describe the process of adopting new elements in the curriculum.

1. A need is recognized and/or new ideas are introduced through pressure from public opinion, donor agencies, or at international conferences. For example, pressure from donor agencies (World Bank, IMF, etc.) to address illiteracy and structural adjustment generated the 1984 school reform effort. At the 1986 Conference of CILSS, Senegal made a commitment to integrate environmental education into the curriculum.

2. Consultation takes place with representatives of concerned and interested parties. For example, in 1981, the government of Senegal convened Les Etats Généraux de l'Education et de la Formation (the permanent council on education and training) which included representatives of parents, teachers, donor agencies, Islamic leadership, religious organizations, etc. The consultation phase serves to broadly define problems and needs and to suggest general directions for solutions. It is also a strategy to both inform and include political forces in the change process, to create consensus, and to raise public awareness on important issues.

3. The Ministry of Education charges the Directorate of Planning and Educational Reform to create a special project unit within INEADE, its curriculum research and development arm, with research and formulation of goals and objectives of the curriculum. The resulting general principles/guidelines are officially adopted by the Ministry of Education. Start-up funds are provided by donor agencies.

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4. A second phase of consultation ("sensibilisation") takes place under the direction of the INEADE project team at the regional and local levels and includes teachers, principals, parents, and various community groups. The stated purpose of this phase of consultation is "sensibilisation" or raising awareness. In fact, this phase appears to be an attempt at "marketing" changes. Consultation does not seem to consider curriculum content or needs assessment.

5. The curriculum and teacher and student materials are developed by the INEADE project team of specialists and piloted in selected schools. Teacher training is limited and relies primarily on the "multiplier effect."

6. A third phase of consultation takes place at the local and regional level and includes parents, regional and community leaders, local school personnel, representatives of ministries, and other concerned groups. The purpose of this consultation is to inform, raise awareness, and make improvements on the pilot program content although few changes seem to occur as a result of this phase.

7. The program is officially adopted in the national curriculum. The new curricular changes are mandated by ministerial decree communicated to local school personnel through the inspectors.

Factors that Promote and Constrain Curriculum Change

Interviews with officials from the Ministry of Education and others and personal observations suggest that the capacity of the system to change is weak and needs improvement. This is due in part because there is lack of articulation among identified needs for change, feasibility/cost-effectiveness, and strategies for implementation, specifically teacher training and student testing. A rigid, top-down hierarchy does not provide an effective mechanism for feedback and evaluation. Therefore, once a change is engaged in the system there are no mechanisms for alteration or adjustment. Another complication is that frequently change strategies originate from the elite which makes it difficult to gain support for innovations from a wide range of stakeholders. Other constraints that influence this include:

- highly centralized decision-making;
- lack of institutional structures that facilitate the movement of information from the bottom to the top of the hierarchy;
- lack of follow-up support to local schools on innovative changes; and
- lack of articulation with in-service and pre-service teacher education.

On a more positive note, several factors were identified that are contributing to a greater capacity to introduce sustainable innovations and change. These include:

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- a growing awareness of improvements that would facilitate sustainable curricular innovations--increased input, communication, and involvement of teachers and parents, and better local and regional support and follow-up;

- systematic consultation of many sectors of Senegalese society to promote changes and innovations and to reach consensus on new proposals;

- substantial growth in NGO activity to complement initiatives in the formal education sector with out-of-school activities for school goers and children not attending school--increasing awareness of the need to interface formal and non-formal efforts with clusters and bundles of activities around similar objectives.

- recognition by donor agencies of the need for clarity and consensus on objectives and joint concerted efforts to provide incentives for change; and

- a corps of well-trained and experienced individuals within the Ministry of Education capable of providing strong leadership.

Lessons Learned

The integration of health, population, and environmental issues into basic education in Senegal is currently in an embryonic stage, with curriculum and materials yet to be fully developed and implemented at the national level. The fact that there is overwhelming public consensus and a clear mandate from the Ministry of Education to address these critical and often controversial issues in the school curriculum creates a positive climate for change. The Ministry is skilled in using consultation with a wide range of influential sectors of society to raise public awareness and achieve consensus. It would appear, however, that the success of these efforts to introduce new elements into the curriculum may be compromised by a rigid, top-down hierarchy and centralized decision-making process within the educational bureaucracy. New programs are developed by a rather isolated project unit within the central Ministry, with little input or participation from local school personnel and limited coordination with other branches of the Ministry (such as, the Divisions of Primary Education, Middle and Secondary Education, Examinations, Training).

Consultation is not synonymous with participation in curriculum decision-making. The results may be well-designed materials and well-conceived programs that lack practical and conceptual feasibility to be successfully delivered in the classroom. In Senegal, the environmental, population, and family life initiatives assume "multidisciplinary" integration of the new topics across the curriculum, and a new pedagogical approach to education (student-centered, problem-solving, hands-on) that departs significantly from traditional student-teacher roles. Both these assumptions require significant teacher training at a conceptual level difficult to address through the current in-service strategy of the "multiplier effect." It may be more effective to devote scarce time, energy, and resources in developing strong regionally-based teacher training and support (that also assist teachers in developing the topics) rather than in costly new curriculum outlines and materials. Greater teacher participation in curriculum decision-making often provides teachers with needed incentives to

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implement new programs and practices not present in the current system. Local teachers are also better placed to "sell" changes, especially on topics of sexuality, to parents and community members.

From interviews and conversations with Ministry of Education personnel, it is clear that there is a growing recognition of the need to decentralize the Ministry of Education and spread decision-making power in regional and local units. Regional school partnerships, "associations of academies" (associations d'academies), and regional teacher centers have been effective models in the U.S., Nigeria, and Botswana. These may be effective of worthy strategies support by donor agencies. These efforts often link specific school improvements to teacher training and education, and join schools with youth-serving agencies outside schools.

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III. OBSERVATIONS AND RECOMMENDATIONS

A. THE NATURE OF CURRICULUM

The literature on curriculum development in the sub-Saharan African countries has long suffered from a scarcity of field-based evidence, incorporating the objectivity of external observers with the particular insights of practitioners in the field. The classroom observations and interviews with educators in the countries involved in this study have helped to fill this gap, by providing a much richer understanding of the issues surrounding curriculum development, and establishing a much clearer analytic framework for the development of a working hypotheses. Along with the accompanying review of findings from other studies relating to curriculum and content in developing countries, they have allowed the construction of a number of assertions regarding the nature of curriculum in these countries, and the policy implications for donors and educational planners.

1. Classroom instruction is exam-driven. While this presents a particular challenge for curriculum development, since it means that the intended curriculum is frequently not being implemented, it also demonstrates the potential for curricular reform based, in part, on reform of evaluation and measurement procedures.

2. Interaction patterns within the classroom are almost exclusively teacher directed. While similar patterns have been observed in many other geographic areas, they may be particularly limiting within those sub-Saharan African countries where trained teachers are in extremely short supply. This phenomenon also limits and distorts the evaluation process since teachers, because of this interaction pattern, are unable to evaluate students' understanding as it evolves through open exploration of concepts and ideas in the classroom. Evaluation then is forced into a static, summative mode that has much less impact on classroom behavior and much less potential for improving student learning. While these interaction patterns may be susceptible to change over time, the short-term implication is the need to couple curriculum reform with intensive in-service teacher trainng.

3. Instructional materials are rarely used in the classroom and where used they are seldom produced locally. This is unfortunate, because experience shows that teachers can easily learn to produce excellent teaching aids--posters, textbooks, alternative types of reading materials and manipulatives used in the teaching of mathematical and scientific concepts. This not only casts the teacher as a learner, an extremely important paradigm shift in itself, it also connects school learning with the here-and-now in the mind of teachers and students--another not-insignificant paradigm shift.

4. The curriculum is structured in ways that prevent language from making a full contribution to the learning process. Ironically, this has the perverse effect of

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turning Africa's rich oral tradition, potentially its greatest educational asset, into an educational liability, limiting both access to schooling and persistence within the schooling program for those children without easy access to a metropolitan language. Schools must explore and experiment with language--both maternal and second languages. The curriculum is a potential source of dramatic change if children become empowered through language. Since it is the medium in which knowledge is acquired, students need to develop and master both receptive (reading/listening) and expressive (speaking/writing) language skills.

Despite the controversy that surrounds language of instruction, common sense and curriculum imperatives must prevail at the classroom level. Whatever their long-term needs, children also need short-term affirmation; this means that they need a voice from the earliest days of schooling. Their language and their culture must be the basis of their first schooling experience. This may be the single greatest curriculum challenge facing educational planners today, particularly in the French-speaking countries.

5. Student grouping patterns are highly predictable and generally foreign to the learning style children bring to the classroom. In an oral, sharing tradition peer tutoring, small group learning patterns and similar approaches surely have something to offer. Grouping patterns need to enhance cooperation in the classroom and must not reinforce gender boundaries and isolation and other types of social marginalization and stratification. Alternative grouping patterns can improve socialization in the classroom and increase the learning capacity of all children from the brightest to the slowest. This underscores the need for dialogue and the importance for in-service teacher training to strengthen teacher problem-solving skills, which can then be applied to these group settings.

6. The learning environment is organized as a function of perceived teacher needs rather than student needs. Methodologies and instructional techniques need to reinforce a more participatory, child-centered environment where the child feels emotionally and physically safe.

7. Gender-related issues are a frequently unacknowledged factor with great potential for changing behavior patterns related to health, environment, and population. Women and girls not only reproduce, but are often the guardians of households and the environment. Economic conditions and health factors converge in those cases where women and girls find it necessary ~~to survive~~ or gain economic independence by selling sexual favors. STDs, including ~~HIV~~/AIDS, have become a greater threat to many women and girls facing limited social and economic options. Education for women and men in the countries studied often fails to provide women with equal access to the law.

8. The integration of health, population, and environmental issues into basic education is currently in an embryonic stage, with curriculum and materials yet to be fully developed and implemented at the national level. The fact that there is overwhelming public consensus and a clear mandate from the Ministries of

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Education to address these critical and often controversial issues in the school curriculum creates a positive climate for change. The Ministries are skilled in using consultation with a wide range of influential sectors of society to raise public awareness and achieve consensus. It would appear, however, that the success of these efforts to introduce new elements into the curriculum may be compromised by the frequently rigid, top-down hierarchies and centralized decision-making processes within the educational bureaucracies. This may combine, with a sort of negative synergy, with a growing tendency at the classroom level to skirt those topics which may hold the greatest potential for influencing behavioral change.

9. Consultation is not synonymous with participation in curriculum decision-making. The results may be apparently well-designed materials and internally coherent programs with little or no external relevance to target classrooms. This points up the need for teacher involvement as "policy brokers" in curriculum matters.

10. Teacher training strategies currently fail to address the new curriculum environment of most countries. The environmental, population, and family life initiatives assume "multidisciplinary" integration of the new topics across the curriculum, and a new pedagogical approach to education (student-centered, problem-solving, hands-on) that departs significantly from traditional student-teacher roles. Both these assumptions require significant teacher training at a conceptual level which is difficult to address through the current in-service strategy of the "multiplier effect." It may be more effective to devote scarce time, energy and resources in developing strong regionally-based teacher training and support (that also assist teachers in developing the topics) rather than in costly new curriculum outlines and materials.

11. Greater teacher participation in curriculum decision-making often provides teachers with needed incentives to implement new programs and practices not present in the current system. Change agents must be found among local teachers, who are also better placed to "sell" new approaches, especially on sensitive topics such as family life education and human sexuality, to parents and community members. It is clear that there is growing recognition of the need to decentralize the Ministry of Education and spread decision-making power among regional and local units. It is less clear whether there is an understanding of the conceptual and qualitative changes which must occur for decentralization to lead to the desired increase in local ownership of curriculum decisions, as well as responsibility for the relevance of educational programs.

12. Regional school partnerships, and regional teacher centers in some countries have provided effective models that may suggest worthy strategies for future donor agency support. These efforts often link specific school improvements to teacher training and education, and join schools with youth-serving agencies outside schools.

If one can assume that curriculum improvements are effective only insofar as they efficiently and meaningfully get translated into classrooms to students, then funding for curriculum improvement efforts should:

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- recognize the importance of incorporating in-service training strategies to provide teachers with the meta-cognitive skills to develop their own repertoires of how to address critical issues in their own schools and classrooms;

- support decentralized efforts at teacher training and headteacher training, but only in conjunction with support for establishment of new regional education entities with access to information sources and funding, and the authority to make regionally meaningful curriculum decisions;

- train regional education officers and headteachers in assessment and evaluation of teachers as a cornerstone of efforts for implementation of new curriculum approaches;

- support the development of a regional network of educators that will focus on issues of quality in teacher training, curriculum, and expected outcomes of schooling, especially with respect to health and environmental education; such a network would include representatives from Ministries of Education, Higher Education, Health, and Natural Resources; and

- move beyond goals of awareness and talk about dissemination of information and behavioral changes; value shifts are likely to influence and be influenced by peers, family, community practices, economic realities, and tradition.

B. PERSPECTIVES AND PROMISING APPROACHES

This study, which was exploratory in nature, provided incidental or anecdotal information about a number of unresolved curriculum issues that deserve more comprehensive treatment through follow-up studies. Areas identified as meriting much further data and analysis include the following: (1) institutional support for curriculum development; (2) linkages between curriculum development and teacher training, both pre- and in-service; (3) curriculum content; (4) the relationship between curriculum content issues and broader school improvement initiatives; and (5) linkages with measurement and evaluation.

Institutional Support

In most of the French-speaking countries, Instituts Pédagogiques Nationaux were established in the 1970's for the purpose of resolving the following curriculum issues: (a) scope and sequence of grade-specific subject matter; (b) textbook development from manuscript development through publication, distribution, teacher guides and related teacher training; (c) development of teaching materials, and in many cases; and (d) in-service teacher training. Additional studies are urgently needed to determine the extent to which these objectives are being met, the general efficiency of the Instituts Pédagogiques Nationaux (IPNs) and institutional linkages with the inspectorates, the general secretariat of the ministry, regional educational offices, etc. There is a wealth of anecdotal evidence to suggest that in most countries, the IPNs are not working well; similar issues need to be explored for the English-

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speaking countries, even though these responsibilities are generally housed within different institutions than in the French-speaking countries.

Linkages With Teacher Training

We need much better information about these linkages for the pilot countries. In the U.S., under the impetus of the Holmes Group findings, much evidence is emerging to demonstrate the importance of school-based teacher training. Since many developing countries have explicitly linked curriculum development and teacher training, it seems reasonable to conclude that for this linkage to be effective, it should be based on in-school practice, but at present we know almost nothing about the extent to which this is being done.

As countries respond to the particular curriculum challenges posed by multi-grade, double-shifting and large class situations, these linkages will become even more important.

Curriculum Content

A recent study in Guinea showed that 65% of the individuals portrayed in the newest grade 1 reading books were male. Supplemental studies are needed in the pilot countries to examine gender, urban, and voluntary service organization (SES) biases. Another key content issue is related to the transition from a mother tongue to a metropolitan language. This transition is handled differently in each country, but with general unimpressive results in most. Additional studies should focus on developing major pilot-initiatives in this area.

School Improvement Initiatives

While the earlier effective schools "movement" and the related school improvement models stressed the importance of regular monitoring of student learning and attitudes supportive of learning, it has generally been accepted that changes in particular aspects of the curriculum are unlikely to lead to overall school improvement (see for example, Lockheed and Verspoor, 1992). We believe that this conclusion, reached almost exclusively from studies in developed countries, where the curriculum environment is very different, is premature. Much more information is needed about cultural and institutional impediments to content change.

Measurement and Evaluation

Three types of evaluation can be envisaged: (1) evaluation of student learning; (2) evaluation of teacher effectiveness; and (3) evaluation of curriculum content. Current student evaluation is generally normative and, except at the school level, almost never criterion based. Yet criterion-based evaluation linked to the intended curriculum is a vital input for educational planners and teachers alike. This should be a key priority of future studies.

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APPENDICES

APPENDIX A

Summary Charts and Matrices

- Cross-Matrix of Major Findings on Curriculum Development and Decision-Making
- Summary of Selected Programs on Health, Population, and Environment by Country
- Matrices of Country Programs on Health, Environment, and Population

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CROSS-MATRIX OF MAJOR FINDINGS ON CURRICULUM DEVELOPMENT AND DECISION-MAKING

ORGANIZING QUESTIONS	BOTSWANA	THE GAMBIA	SENEGAL
(1) What efforts are currently being undertaken to integrate the critical topics into basic education curriculum?	- Family Life Education is taught in all junior secondary and secondary schools. - Items on health, environment, and family life education appear on the Primary School Leaving Exam. - Reproduction and sexually transmitted diseases are topics taught in schools. - Wildlife clubs operate in schools as extracurricular activities. - Teacher training focuses on developing student projects about the environment. - Environmental Education Conference convened in 1991.	- Teachers in primary, middle, and secondary schools coordinate the development of school farms and gardens. - At the secondary level, Population and Family Life Education studies are being introduced with "carrier subjects": science, social and environmental studies, and home economics, beginning January, 1993. - Training in Protection of the Environment (T.I.P.E.), a school-based intervention emerging from CILS (Inter-States Committee for Drought Control in the Sahel), is offered. - New curriculum materials are redistributed to primary and middle schools. - Radio dramas which focus on AIDS and health care, written in collaboration with the Ministry of Public Health, MOE, and others, are produced.	- Pilot environmental education curriculum is currently being implemented in 116 primary school classes; the piloting of middle/secondary environmental curriculum is planned for implementation in 1994. - Population and family life curriculum and materials are being developed; a 3-year pilot program to begin in 1993 and be completed in 1996. - Limited instruction is provided on AIDS/STD prevention in public secondary schools, none at the primary level; private Catholic schools include some instruction on AIDS/STD prevention. - A variety of efforts on all topics are undertaken by local NGOs in and out of school.

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ORGANIZING QUESTIONS	BOTSWANA	THE GAMBIA	SENEGAL
(2) What is the process of curriculum decision-making for these efforts?	- Initiatives for change reportedly result from donor or consultant recommendations (pressure) to the government. A single expatriot consultant described a number of produced major structural changes in education that emanated from his talks with highly placed officials in the MOE. USAID has funded three projects, each of which have produced major organizational and curricular changes within Botswana. - The process for making curriculum decisions is centralized in the Ministry of Education at the national level. - There are three stages to curriculum decision-making: (1) an idea is conceived, frequently introduced from the donor community or as a result of observations and advanced training of an officer in the Ministry of Education; (2) subject panels are convened and provide input as materials are developed; and (3) a small group of curriculum developers write and pilot test the new materials.	- Initiatives for change are often linked with the President. - The process for curriculum decision-making has two stages: Stage 1 subject panels are convened for interpretation of policy; Stage 2, one to two curriculum developers write materials and syllabus.	- Major innovations in curriculum content and/or pedagogical approaches emerge at macro level from international or national conferences. - Major policy changes are adopted at ministerial level. - Ministry of Education is charged with research and development of new policy initiatives. - Ministry of Education creates new administrative unit to: (1) develop curriculum materials; and (2) develop strategies for public consensus on introduction of innovation.

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ORGANIZING QUESTIONS	BOTSWANA	THE GAMBIA	SENEGAL
(3) How are innovative programs introduced into the education system?	- A group of trainers of trainers is assembled. This group is likely to be comprised of people from the Teacher Training Office of the Ministry of Education. - The trainer of trainers group models the innovation for regional education officers or their representatives. - The regional educators train clusters of head teachers from schools. The head teachers return to their schools and train their staffs of teachers.	- The Ministry of Education holds teacher training sessions in in large central sites (i.e., in Banjul at The Gambia High School) for trainers of trainers. - Donor agencies and Gambia College work directly with teachers (school farms and gardens project--UNICEF). - Volunteer organizations train volunteers and then place them in schools as teachers--in cooperation with the Gambian government (Peace Corps and VSO).	- Technical experts from the Ministry of Educational and other related Ministries are appointed to a training team; the training team holds regional workshops for selected teachers, administrators, parents, religious authorities, and "interested" members of the public; selected regional teacher training takes place; a pilot program is experimented in selected schools.
(4) Who is involved in curriculum decision-making, curriculum development, and curriculum design?	- Subject panels--teachers, curriculum developers, subject area specialists, and representatives of relevant ministries.	- Subject panels provide input; on the development of materials; panel members are drawn from technical experts from Ministries related to the subject, trade unions, religious leaders, teachers, and curriculum developers. - The Curriculum Development Unit is responsible for curriculum development and design.	- The expert team at INEADE, the curriculum development unit of the Ministry of Education, with guidelines from national authorities and/or Minister of Education.

ORGANIZING QUESTIONS	BOTSWANA	THE GAMBIA	SENEGAL
(5) What are elements within the educational system that foster positive and sustainable change?	- Botswana is a stable democracy that is economically viable. - The institutionalized process for soliciting input on policy and curricular change mirrors the traditional *kgotla*. - The government is willing (and able) to invest in improving the quality of education. - There is a well-developed educational infrastructure already in place: a four-year, degree granting institution that includes a Department of Teacher Training, attractive regional educational resource centers that appear well-staffed and adequately supplied with materials, and an institutionalized provision for regular in-service training and assessment. - Considerable donor (USAID) investment in education.	- The Gambia is a stable, multi-party democracy. - There is a consultative process that comes into play for major policy decisions. The process insures broad-based support for proposed changes. - Teaching resource centers are located in each of the regional headquarters. - There is a small cadre of educators with advanced degrees and considerable knowledge about both education, in general, and education in The Gambia specifically. These men are bright, articulate, energetic, and placed in positions of authority.	- Process of national consultation aimed at achieving public consensus and support. - Increasing awareness of the critical role of education in addressing topics. - Competent and experienced cadre of professional educators within the INEADE. - Perceived need by Ministry of Education personnel for greater decentralization of decision-making, more teacher and local participation in curriculum issues. - Growth of non-governmental organization activity.
(6) What are ways to mobilize the formal education sector to address issues of health, population, and environment within the basic curriculum?	- Training for or conversations with persons at the highest levels of the MOE. - Training for Education Officers.	- Training for Education Officers. - Opportunities for consultations with the President.	- Concerted pressure from donor agencies. - High level policy declarations.

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ORGANIZING QUESTIONS	BOTSWANA	THE GAMBIA	SENEGAL
(7) What generalizations can be made that will serve to guide policy for funding curriculum improvement efforts?	- The effect of centralized teacher training efforts reportedly gets diluted as training comes closest to classroom teachers. - Head teachers, teachers, and regional officers may over-rely on suggestions from the office of the Chief Education Officer for innovative ways of addressing critical issues in schools and classrooms. Funding might work to gradually support decentralized efforts at teacher training. - The training of regional education officers and head teachers does not appear to include an emphasis on assessment and evaluation of teachers as they attempt integration of the topics into their teaching. - Botswana has the educational institutions and the expertise to support the development of a regional network of educators that will focus on issues of quality in teacher training, curriculum, and expected outcomes of schooling, especially with respect to health and environmental education.	- Funding of curriculum improvement efforts should be considered in concert with additional funding for teacher training and assessment.	- Current efforts assume: (1) integration of the topics across the curriculum; and (2) a significantly different pedagogical approach; both assumptions imply retraining of teachers not likely to be effective through the "multiplier effect" strategy. - Regionalized teacher training and support may be more cost-effective than curriculum and materials development. - School improvement efforts need to be constructed around local problems and local issues.

SUMMARY OF SELECTED PROGRAMS ON HEALTH, POPULATION, AND ENVIRONMENT BY COUNTRY

BOTSWANA

Peer Approach Counseling by Teens (PACT)	
Funding Sources	SIDA, NORAD, BOTSPA, WHO.
Initiating Sponsor	Initiated in June 1990 by Gaborone YWCA.
Description	The program was conceived in response to the growing AIDS crisis in Botswana which has resulted in a tendency for older men (and women) to seek sex with increasingly younger and presumably "safe" adolescents and to address the high rate of teen pregnancy (caused mostly by older men). The philosophy of the program is guided by a belief that teenagers rely on and reply to each other, and strongly influence each other's decisions. Objectives are: (1) to provide factual information on all aspects of sexuality; (2) to increase decision-making, problem-solving, and leadership skills; (3) to clarify values; (4) to improve communications between teens and parents on sexuality; and (5) to coordinate/link with agencies, programs, and schools serving teens. The program also includes information and discussions on the environment and population issues. Main activities are training teen counselors through workshops and afternoon school sessions, and meeting with teacher-counselors and headmasters. PACT leaders counsel students in school and in the community, present sessions in school, and work with teachers on sex education curriculum.
Outcome	While no formal evaluation has taken place there is general agreement (teens themselves, teacher-counselors, program staff) that knowledge and attitudes on sex-related issues have increased; teens show maturity, leadership, and enthusiasm for the program. Requests for expanding the program to more schools and communities have been received by students, parents, and teachers. PACT has been recognized as exemplary by WHO and by WHO/Adolescence and Youth Program, and the International Youth Program. The program appears to be quite cost-effective.

Teen Mothers Project	
Funding Source	Pathfinder Foundation and the GOB Trust Fund.
Initiating Sponsor	Initiated by YWCA in August 1992 following growing public concern and published research reports on the high rate of teen pregnancy.
Description	The purpose is to provide educational and vocational training for girls who have dropped out of school. The curriculum includes parenting skills, family life education, family planning, health, and religious instruction. The program enrolls about 20 girls and 20 babies a year and includes a day-care facility and counseling for fathers.
Outcome	There have been 0% repeat pregnancies for participating girls, and all have continued their education by returning to public or private school, or vocational and teacher training. Ministry of Education policy excluding pregnant and parenting girls from school has not changed in spite of vast evidence showing that participants in these kinds of programs become economically self-sufficient and do not have more children.

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Family Life Education (FLED)	
Funding Source	Unknown.
Initiating Sponsor	Ministry of Education.
Description	This program was introduced into schools in the early 1980s. At the *primary* el, FLED is an optional topic in the science syllabus and not examinable thus ensuring that it not taught. FLED is compulsory and examinable at the *secondary* level, but rarely covered in d
Outcome	Unknown.

Environmental Education Syllabus	
Funding Source	Ministry of Education, USAID, and NRMS project.
Initiating Sponsors	Initiated in the late 1980s by the National Conservation Strategy and the National Planning Conference on Environmental Education (October 1991). Linked to the Ministry of Education.
Description	The project is still in the developmental stages with the following activities currently being integrated: syllabus revision; video, audio, and printed materials production; and teacher training design. The curriculum content deals with five major issues: water use, land use, population and urbanization, desertification, and reforestation. The curriculum design approach is "to modify the emphasis of the syllabus, not to heap more on teachers, but to use environmentally-oriented activities and practice schemes (Jack Reed, NRMS)."
Outcome	Enthusiasm and interest are high on the part of Ministry of Education and teachers but implementation has yet to occur.

Wildlife Clubs	
Funding Source	GOB, KCS.
Initiating Sponsor	Initiated by GOB in late 1980s and now facilitated by the Kalahari Conservation Society (KCS).
Description	A school support program organized around hands-on projects and activities, e.g., wildlife "museums," nature trails, school gardens, tree planting, etc. The KCS provides support with teacher guides, student materials, and video cassettes.
Outcome	School programs are initiated, maintained, and sustained by interested teachers. Little coordination exists among Wildlife Clubs.

Kalahari Conservation Society (KCS)	
Funding Source	SSCN, WWF, EED, USAID.
Initiating Sponsor	Founded in 1982 to promote environmental education and conservation. KCS has always been closely linked to the Ministry of Education.
Description	KCS undertakes a variety of projects, mainly in the form of materials support to teachers through its resource center and some teacher training. KCS is developing a program to employ students children on environmental projects.
Outcome	The resource center is extensively used; there are over 80 Wildlife Clubs across the country.

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MOE Curriculum Materials--Environment	
Funding Source	World Bank.
Initiating Sponsor	World Bank.
Description	Writing of the MOE curriculum materials was completed in November 1993. Complete texts and teacher editions were prepared for all core subjects, grades 1-9. Texts integrate health and preservation of the environment. Texts are situated in the Gambian experience, colorful, and clearly written. They call for student project development and considerable interaction with each other as well as with the teacher.
Outcome	Phased implementation into schools beginning September 1993.

MOE Curriculum Materials--Family Life Education/Population (FLE/POP)	
Funding Source	GOG.
Initiating Sponsor	GOG.
Description	MOE curriculum materials--FLE/POP--are scheduled for inclusion in secondary school curriculum in January 1993. FLE/POP topics are being introduced through science, and social and environmental sciences. Inclusion of these topics into the curriculum was preceded by an attitudinal survey of parents, and a series of consultations meetings held near Banjul in October 1992 with the teachers.
Outcome	Parental resistance was averted. Religious as well as technical voices were heard. It is too soon to assess impact on students.

School Farms and Gardens	
Funding Source	UNICEF and local schools.
Initiating Sponsor	Program initiated by UNICEF.
Description	There are multiple purposes to this project: integration of environmental and agricultural science topics into school curriculum, generation of food and income for the school, and community development.
Outcome	Highly successful in most schools observed, reportedly one of UNICEF's most successful programs. Schools are producing vegetables to be served at school meals, and in some cases, schools are selling their surplus produce to local markets for a profit.

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Comité Permanent Interétats de Lutte Contre la Sècheresse dans le Sahel (Training in Protection of the Environment (TIPE))	
Funding Source	EEC.
Initiating Sponsor	Initiated at CILSS conference in 1989.
Description	Sahelian project in Regions II and IV. School-based intervention aimed at integrating environmental education into primary school curriculum.
Outcome	Unclear, no evaluation or assessment described. External funding ends 1992-1993, the Gambian government then assumes responsibility for the program.

Society for Women Against AIDS in The Gambia (SWAGGAM)	
Funding Source	Fund raisers by NGO, GOG.
Initiating Sponsor	NGO based in Lagos, Nigeria.
Description	Organization of women which works closely with the National AIDS Prevention Program at education and consciousness-raising with respect to the incidence and danger of HIV/AIDS in The Gambia. Amhed Loum is the spokesperson.
Outcome	Several fund raisers and publicity events in the Greater Banjul area. The government then assumes responsibility for the program.

TANGO	
Funding Source	Unknown.
Initiating Sponsor	Unknown.
Description	Umbrella organization for all NGOs in The Gambia.
Outcome	Unknown.

International Foundation for Education and Self-Help (IFESH)	
Funding Source	Unknown.
Initiating Sponsor	Group of educators based in Phoenix, Arizona.
Description	The aim of the group is to teach and provide assistance (in the form of materials) in selected developing countries.
Outcome	Gambia College has an highly qualified lecturer who is a retired professor. It is unclear what share of her salary is paid by Gambia College.

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Junior Achievement	
Funding Source	President's Office; private sponsors expected.
Initiating Sponsor	President's Office.
Description	An out-of-school project aimed at young teenagers for the purpose of developing leadership and entrepreneurial skills.
Outcome	May be the first project for youth funded by the President's office specifically with an eye toward privatization.

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SENEGAL

Programme de Formation d'Information pour l'Environnement (PFIE) (Training and Information Program on the Environment)	
Funding Source	European Economic Community (EEC).
Initiating Sponsor	Initiated at CILSS Conference in 1989.
Description	The purpose of the program is to fully integrate environmental education into the primary school curriculum. Program objectives are to provide children with information and knowledge on their environment and to assist children in developing new behaviors to protect natural resources. The program includes innovative instructional approaches: hands-on student-run projects (gardens, tree-planting); student-centered learning; community involvement in school and out of school; and out-of-classroom learning activities. Some assumptions of the program are noteworthy: (1) it is possible to radically change the way students learn; (2) it is possible to open schools to the community and the milieu; (3) it is possible to bring non-school personnel into the school (health workers, foresters, farmers); and (4) it is possible for students and teachers to create programs better adapted to their needs if left alone by the authorities. Piloted in four schools in the Podor region since October 1991; instructional materials for students and teachers have been published.
Outcome	No formal evaluation has taken place but student standardized test scores in the pilot schools have improved. Environmental Action Projects are underway in all schools with high parent participation. Problems identified by Program Director, Oumar Sy, are: need for greater participation of local schools in project design; better coordination with related programs, e.g., Family Life and Population Program; and need for recognition that significant changes in the way schools operate takes time.

Education à la Vie Familiale et en Matière de Populaltion (Family Life and Population Education)	
Funding Source	Ministry of Education.
Initiating Sponsor	Initiated by the 1988 "National Population Policy Declaration" and UNESCO. Started in 1992.
Description	The program aims to fully integrate four main concepts into the school curriculum: family life/population, health, environment, and migration patterns. The approach is "to give students information and leave them free to take the decisions that they judge the most responsible." The initial phase of curriculum design has been completed. Materials are now being produced and the program will be piloted in selected schools in 1993.
Outcome	Pilot schools have been selected and teacher training has taken place but the program has not yet been implemented in schools. Several national and regional seminars have taken place to inform/promote the program, and to solicit feedback from parents, students, school and religious authorities, and community organizations. Birth control and sexuality are tabou subjects of discussion in Senegal and the Ministry appears to have taken a careful approach in building consensus and acceptance for the new curriculum at all levels. There appears to be good coordination with other sectors, e.g., Health, Youth and Sports.

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Education à la Vie Familiale (Family Life Education)	
Funding Source	UNDP.
Initiating Sponsor	Initiated in the 1988 by the "National Population Policy Declaration" and UNESCO--Ministry of Youth and Sports.
Description	A program aimed at providing education/information on population, family life, AIDS, health, and the environment for the large numbers of Senegalese youth not enrolled in school.
Outcome	Unknown.

Un espoir dans le désert (Hope in the Desert)	
Funding Source	DANEDA.
Initiating Sponsor	Initiated in January 1989 by ENDA-TM (Environment and Development Action in the Third World).
Description	A multi-faceted program addressing issues of hygiene and health, agroforestry, animal husbandry, and socio-cultural activities (literacy, theater, etc.) and based on a three pronged approach of research/action/training. Currently working with school-age children in three sites and thirteen schools on in-school and extra-curricular environmentally oriented "mini-projects," e.g., village clean-up brigades, school gardens, composts, seedling nurseries, construction of latrines, and literacy classes. Parent and village involvement, open dialogue between the school and the local environment, and participatory action are central to the project's goals.
Outcome	Significant projects exist at all sites. The projects are entirely operated at the local level with minimal control, direction, and financing from ENDA-TM, indicating high sustainability. Local participation is high.

Environment and Development Action in the Third World (ENDA-TM)	
Funding Source	Primarily by the Swiss (20%) and EEC countries. Located in Dakar with branches in Southern African, India, the Caribbean, and Latin America.
Initiating Sponsor	Initiated in 1972 after the Stockholm Conference.
Description	Fifty percent of ENDA-TM activities are in the Sahel region. Most activities involve working at the grassroots level with community organizations on issues of environment, health, and quality of life. Projects are varied and numerous and include reforestation in the Casamance and Thies regions, income producing truck garden projects in rural areas, employment/training programs for street children in Dakar (Jeunesse-Action), in-school programs on public health and traditional medicines (working with Werner's book, *Where There Is No Doctor*), local hygiene projects, and AIDS education. ENDA-TM also publishes pamphlets on excision, AIDS, traditional herbal medicines, etc.
Outcome	ENDA-TM's approach is low-cost with high local participation and control. It is based on "Freierian" principals of helping local populations to identify needs and design action projects. Projects look promising in terms of sustainability and merit a closer look.

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Kall-Yoon: Projet Inter-NGO "Les Jeunes au Service des Jeunes" (Youth to Youth Inter-NGO Project)	
Funding Source	From a variety of NGO sources.
Initiating Sponsor	Initiated in 1992 by the Scouts of Senegal.
Description	The program aims to assist adolescents: (1) to develop peer communication and counseling skills; and (2) to be better informed on reproduction, sexual behavior, AIDS, STDS, pregnancy, and family life. Based on a peer-counseling approach (similar to PACT in Botswana), the program works in a variety of settings in three locations in Senegal (Dakar, Saint-Louis, and Zinguinchor) through diverse youth, community and religious organizations, and schools.
Outcome	Unknown.

TOSTAN	
Funding Source	By UNICEF and a variety of NGOs, e.g., Canadian Center for Research and International Cooperation (CECI), Catholic Relief, CCF, FED.
Initiating Sponsor	An NGO founded in 1988 by a former Peace Corps volunteer.
Description	A comprehensive village literacy program that includes community organization, health, management of family economy, vegetable gardening, animal fattening, income-generating projects, production activities, and reforestation skills.
Outcome	This non-formal education program has attracted much attention in Senegal for its success with improving literacy, village health, village leadership and decision-making skills, training of village trainers, and its high female participation. Cost-effectiveness appears to be a drawback, with implications for sustainability.

ABACED	
Funding Source	Unknown.
Initiating Sponsor	NGO initiated by a Dakar schoolteacher in 1991.
Description	Non-formal peer education after school program aimed at HIV/AIDS prevention.
Outcome	Unknown.

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UNICEF	
Funding Source	UNICEF.
Initiating Sponsor	UNICEF.
Description	UNICEF undertakes a variety of educational activities in both the formal and informal sectors and is specifically working with the Ministry of Education to provide support of the pilot schools (of the "New Schools Initiative") in promoting child-centered learning and instructional practices, vaccinations through an "adoption" program where schoolchildren take responsibility for assuring vaccinations for another child, basic health, and children's rights. Activities include teacher training and didactic materials. Other programs of note are a new effort to work with Koranic schools and *marabouts* to improve conditions and instruction on basic health, environment, literacy, and AIDS.
Outcome	UNICEF sources suggest that constraints to program success are: (1) lack of local consultation and participation; (2) poor match between donor and local/national priorities; (3) high illiteracy rate; (4) lack of clarity of program objectives, especially with the Ministry of Education; (5) political selection for training participants; and (6) lack of coordination among the various efforts.

SOS-Environnement	
Funding Source	Unknown.
Initiating Sponsor	NGO initiated by a highschool professor in 1992.
Description	Works with high school and university teachers and students organizing "hygiene and environment brigades" in Dakar. The objective is to disseminate information on the environment and develop neighborhood improvement projects.
Outcome	A growing organization that has mobilized many schools and students in Dakar with minimal funding and support.

Association SIDA Services	
Funding Source	Unknown.
Initiating Sponsor	Initiated by a group of Catholic nuns, Les Soeurs des Maternites, in 1990.
Description	The purpose of the program is to disseminate information on AIDS prevention to secondary school students.
Outcome	Unknown.

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MATRICES OF COUNTRY PROGRAMS ON HEALTH, ENVIRONMENT AND POPULATION

BOTSWANA

PROGRAM	FUNDING SOURCE	INITIATING SPONSOR	GRADE/AGE LEVEL	TYPE OF INTEGRATION	MATERIALS	FOCUS	EXAMS
PACT	SIDA, NORAD, BOTSPA, WHO	YWCA	Teens	▲ADD	Curriculum guide for teachers, student texts	Population, AIDS, Environment Education	N/A
Teen Mothers Project	PATH-FINDER, GOB	YWCA	Teens	▲MD	Curriculum guide for teachers, student texts	Population, Family Life	Yes
FLED		MOE	Primary (optional), Secondary	♦ID	Curriculum guide for teachers	Population, Family Life	Yes
Environmental Education Syllabus	MOE, USAID, NRMS Project	MOE	All levels	♦ID	In process	Environment	Yes
Wildlife Clubs	USAID, GOB	MOE, KCS	All levels, mostly primary	▲ADD	Curriculum guide for teachers, student texts	Environment	None
KCS	SSCN, WWF, EED, USAID	MOE	All levels	▲ADD	Curriculum guide for teachers	Environment	None

♦ID: Interdisciplinary model where new topic is integrated into already established courses
▲MD: Multidisciplinary model where new topic is integrated across the curriculum
▲ADD: Additive model where new topic is added on to existing curriculum or after school
*: Indicates data that is unknown

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REPUBLIC OF THE GAMBIA

PROGRAM	FUNDING SOURCE	INITIATING SPONSOR	GRADE/AGE LEVEL	TYPE OF INTEGRATION	MATERIALS	FOCUS	EXAMS
MOE Curriculum Materials--Environment	World Bank	World Bank	Primary	*	Curriculum guide for teachers, student texts	Health, Environment	*
MOE Curriculum Materials--FLE/POP	GOG	GOG	Secondary	*	*	Family Life, Population	
School Farms and Gardens	UNICEF, Local schools	UNICEF	*	*	*	Environment	*
TIPE	EEC, GOG	CILSS	Primary	*	*	Environment	*
SWAGGAM	EEC, GOG	NGO	All levels	*	*	AIDS	*
IFESH	*	Educator Group	*	*	*	Education (general)	*
Junior Achievement	President's Office	President's Office	Teens	*	*	Privatization	*

◆ID Interdisciplinary model where new topic is integrated into already established courses
▲MD Multidisciplinary model where new topic is integrated across the curriculum
▲ADD Additive model where new topic is added on to existing curriculum or after school
* Indicates data that is unknown

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SENEGAL

PROGRAM	FUNDING SOURCE	INITIATING SPONSOR	GRADE/AGE LEVEL	TYPE OF INTEGRATION	MATERIALS	FOCUS	EXAMS
PFIE	EEC	MOE, CILSS	Primary	♣MD	Curriculum guide for teachers, student texts, student workbooks	Environment	None
PFIE	MOE	MOE, CILSS	Middle, Secondary	♣MD	None	Environment	None
Population & Family Life	UNDP	UNICEF	Primary, Secondary	♦ID	In process	Population, Health	*
Family Life and Population Education	UNDP	UNESCO, Ministry of Youth and Sports	Teens	Non-formal ♠ADD	In process	Population, Family Life, Health, Environment	N/A
A Hope for the Desert	DANEDA	ENDA-TM	Primary	♠ADD	Curriculum guide for teachers, student texts	Environment, Health, Animal Husbandry, Socio-cultural	N/A
ENDA-TM	EEC	*	All levels	Non-formal ♣ADD	Pamphlets	Environment, Health, Quality of Life	N/A
KALL-YOON	NGOs	Scouts	Teens	Non-formal ♠ADD	*	AIDS, Population, Health	N/A
TOSTAN	UNICEF, NGOs	NGO	Adults, Women	Non-formal ♠ADD	Curriculum guide for teachers, student texts	Literacy, AIDS, Health, Environment	N/A
ABACED	*	NGO	Teens	Non-formal ♠ADD	*	AIDS	N/A
UNICEF	UNICEF	UNICEF	Primary	*	Didactic Materials	Health, Environment, Literacy, AIDS	*
SOS/Environment		NGO	Teens, University	Non-formal ♠ADD	*	Health, Environment	N/A
Association SIDA Services	Church	Catholic Nuns	Teens	Non-formal ♠ADD	Curriculum guide for teachers, student texts	AIDS	N/A

♦ID: Interdisciplinary model where new topic is integrated into already established courses
♣MD: Multidisciplinary model where new topic is integrated across the curriculum
♠ADD: Additive model where new topic is added on to existing curriculum or after school
*: Indicates data that is unknown

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APPENDIX B

Review of Literature on the Integration of Health, Population, Environment, Democracy, and Private Sector Into Basic Education

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REVIEW OF LITERATURE ON THE INTEGRATION OF HEALTH, POPULATION, ENVIRONMENT, DEMOCRACY, AND PRIVATE SECTOR INTO BASIC EDUCATION

Following is a synthesized review of literature for comparative analysis of projects in Africa as well as other geographical regions of the world related to the integration of health, population, private sector, democracy, and environment education into basic education. The purpose of the review of literature was: (1) to provide an overview of efforts, documents, and materials that integrate the topics into basic education curricula; (2) to identify three countries to serve as case study sites where strategies have been implemented in health, population, and environmental education; and (3) to identify critical questions and issues to be considered by the research project.

A. OVERVIEW OF PROGRAMS AND POSSIBLE CASE STUDY SITES

The first phase of the literature review was broad, intending to identify specific programs/projects where there are current efforts to integrate the topics of environment, health (HIV/AIDS), family life/population and democracy/private sector into school curricula at the primary or secondary levels. It should be noted, however, that the amount of information on specific efforts in specific locations in the formal education sector was quite limited. Also, the review raised little information on programs and activities in francophone countries. This lack of information may not indicate a lack of school programs but, rather, a lack of access to information about programs and activities that are currently being implemented. This section is organized by potential case study sites but in no way claims to be an exhaustive inventory of programs in existence.

Cameroon

Under the leadership of Dr. Marcel Monitobe, the National AIDS Control Program, with Croix Rouge Internationale, has attempted to integrate HIV/AIDS prevention into primary and secondary curriculum. Cameroon has also developed a family life/population curriculum with assistance from the World Bank, although lack of funding has delayed implementation (Stone, 1992). Obstacles to implementation have been: (1) a generally pro-natalist government policy on contraception; (2) cultural and religious traditions that favor child-bearing; and (3) lack of authority/unwillingness of teachers and other professionals to teach about birth and AIDS prevention (condoms, contraception) (Mbele-Mbong, 1992). The bilingual/bicultural nature of the educational infrastructure is a complex variable that influences both access and delivery of educational services in Cameroon (Harber, 1989) and would suggest that Cameroon is not an appropriate site for this study.

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Kenya

Kenya's Ministry of Education has a special unit devoted to environmental education (National Environmental Secretariat/Environmental Education Information Section). It appears that environmental education is integrated into several school subjects in primary and secondary curriculum. Kenya was the site of the Subregional Teacher Training Workshop on environmental education (UNESCO, 1986). A K-12 social studies curriculum that specifically addresses issues of environment, health, and family life is being developed under the leadership of Peter Myanda-Metebi, Executive Secretary of the ASSP (African Social Studies Programme), and also working with the African Curriculum Organization at Nairobi University (Merryfield, 1989). The ASSP also is working with the World Wildlife Fund on after-school environmental projects for school-aged children. The Pied Crow project produces an innovative publication on environment and health for upper primary school students. The ECHA Project, a promising child health education program being piloted in 35 primary schools in the Nakuru District, uses principles of the "child-to-child approach"[2] and is designed around schools working in partnership with community resources (Tay, 1989). Also, the incorporation of civics and democracy have long been a goal of the national curriculum in Kenya (see Harber, 1989, for a case study of civics education in Kenya). Kenya has a well-developed infrastructure for teacher education. The African Curriculum Organization (ACO) has been very active in teacher training and curriculum development projects in Kenya and elsewhere and could be rich source of information. (Unfortunately, ACO's published materials are difficult to locate in the U.S.) Kenya is recommended as a promising site for research.

Malawi

Malawi has fully integrated HIV/AIDS education into school curriculum grades K-12 through joint efforts with USAID (Dace Stone, Director of AIDSCOM/Malawi). Religious, social, and political sentiments against discussion of issues of sexuality and condom use narrowed the school curriculum objectives to the dissemination of facts and information through didactic methods and materials. Stone suggested that, given the controversial nature of education on AIDS prevention strategies for school children, the role of the school is to "shape a context by providing information," and thereby paving the way for other community agencies to address behavioral issues. In the informal sector, Project Hope is an AIDS education program (through Johns Hopkins University) working with tea plantation workers and Christian missions. According to Mawindo of Mzuzu Teachers College (UNESCO, 1986), Malawi "includes environmental education as an integral part of existing syllabuses at all levels," but effectiveness is limited by lack of teacher training and resources. The Wildlife Society of Malawi sponsors some education projects for school children. Indicators point to Malawi as being a good site for research although official approval is likely to prevent access.

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[2] Child-to-Child is an international program active in 40 countries which teaches and encourages school-age children to concern themselves with the health, welfare, and general development of their pre-school-age siblings and other younger members of the community. It is aimed at helping older children understand how to be constructive in the community. The approach reflects traditional educative models and has been primarily used in health education. A wide range of teaching materials are available through T.A.L.C. (Teaching-aids at low cost), P.O. Box 49, St. Albans, Merts, AL1 4AX, U.K.

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Malawi is also undergoing extensive revisions to make the curriculum more gender-sensitive (Moll-Druecker, B. and Mwalwenje, D., 1993).

Madagascar

Under the UNICEF Initiative for Child Survival, Madagascar has integrated health and nutrition into primary school curriculum. Started in 1987, this effort seems particularly well-documented and well-organized in terms of teacher training and materials (Andrien, 1989).

Mali/Burkina Faso

Both countries have projects integrating environmental and population issues into school curriculum in collaboration with CILSS and UNICEF. There is considerable focus on environmental issues and education in both nations. Both have been active with the child-to-child approach, especially in the area of teacher training (Tay, 1989). The very limited literature on Francophone Africa hints at activities being undertaken in the two countries but program specifics were unavailable. Both Mali and Burkina Faso have undertaken experimental projects in basic education in rural areas that integrate environmental resource management, primary health care, and family life issues along with vocational training (Belloncle, 1984). Initial evaluations suggest these projects have been quite successful.

Nigeria

Nigeria has developed curriculum guidelines and a core curriculum for integrating health issues in the primary school curriculum, using the child-to-child approach (Tay, 1989). Also, a pilot program to integrate Family Life/Population issues in 12 primary schools has been reported as a promising effort in terms of teacher training and materials development (Muhiuddin Haider, 1992). The University of Ibadan is collaborating with the Center for Curriculum Development of the African Social Studies Institute and the African Regional Health Center (ARHEC) on developing curriculum and instructional materials on child health and survival (Oladepo et.al., 1991). The literature indicates a number of AIDS/health education programs that involve partnerships amongst schools and community and village-based organizations (Fabiyi, 1990; Kapila, 1990; Merson, 1990; Olukoya, 1990; Wenzel, 1990). The Nigerian Conservation foundation, a organization of concerned Nigerian business people, is working with the World Wildlife Fund to support projects and promote education on environmental issues (Potter, 1990). This collaborative effort might provide helpful models for school/business partnerships in Africa.

Tanzania

Tanzania has been targeted as a priority country by USAID (Stone, 1992). Current policy of the government's IEC Unit of the National AIDS Control Programme (NACP) targets teens, primarily through school-based programs. Due to difficulties in designing an AIDS education curriculum for schools which is acceptable to both the Ministry of Education and the Ministry of Health, there is no AIDS education in schools in progress, except in a few private schools (Hartwig, 1992). The "Programme of Child Survival and Development" from 1987 to 1991 planned to incorporate major practical and theoretical aspects of nutrition, health, and

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environmental sanitation into the school curriculum (Tay, 1989), but no current information was available on the progress of this initiative. The Ministry of Education also has a family life/population education curriculum development project. There appears to be little attention to environmental education and some research suggests that because most secondary schools in Tanzania are vocationalized into agriculture, home economics, technical and commerce, there is a bias against environmental education (UNESCO, 1988). In the education sector, teaching and learning for democracy has been a central goal of national curriculum and teacher training policy since the 1967 Arusha Declaration. This experience and the decentralized approach which Tanzania emphasizes in its overall development strategy provide unique background characteristics for research.

Uganda

Uganda has been the focus of large scale efforts of AIDS prevention and education. It is not clear how these efforts interface with school curriculum. The Biodiversity Support Program for Africa of the World Wildlife Fund is working with a number of private volunteer organizations in Uganda to develop educational and information support materials on environmental resources conservation and management (Newman, 1992). This effort is in its early stages. There appears to be a great deal of activity in Uganda but reliable information on specific programs was unavailable.

Zimbabwe

A K-12 "Health Across the Curriculum" project was begun in 1989 by Dr. Bernard S.M. Gatawa, director of the School Education Programme Service, in collaboration with the UNESCO child-to-child approach initiative (Tay, 1989). The curriculum includes population and family life but does not appear to include HIV/AIDS prevention. Some research suggests teacher training on AIDS awareness has taken place with a view toward integration into the curriculum at the primary level (Wilson et.al., 1989). Zimbabwe's well-developed educational infrastructure and fairly strong decentralized teacher training institutions would indicate that it is a promising site for research.

B. INTEGRATION OF DEMOCRACY AND PRIVATE SECTOR

Education for democracy and private sector is defined by most research literature as political education and socialization. Research suggests that political education is, by nature, problematic in schools given the highly controversial nature of education for social values. This is especially true in African countries where the demands for nation building and promoting national unity can contradict democratic theory and practices (Blakemore, 1981; Harber, 1989; Hopkin, 1971; McCormick, 1980; Thompson, 1981).

A helpful framework for considering the dimensions of political education is provided by Rosenbaum (1975) who suggests six components of political culture and socialization:

- notions of citizenship (responsibilities, participation, etc.);

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- attitudes toward political deviation and dissent;
- feelings toward major political offices and national symbols;
- concepts of how political change takes place;
- attitudes toward gender, race, religion, ethnicity; and
- attitudes toward social class.

Tyler (1992), suggests the following curriculum guidelines for democratic education.

Education for democracy should help students to learn to:

- respect every individual as a person;
- identify, and develop personal interests;
- appreciate the diverse and positive contributions of others to society and to develop one's own contributions to maximize the combined efforts of all;
- identify the common good in planning both individual and group activities and to value it equally with his or her individual welfare; and
- participate constructively in group activities involving problem identification, search for solutions, experimenting with promising plans, and modifying actions of the basis of the results of initial efforts.

There is a general belief that in developing nations, formal schooling can play an important role in political socialization (Harber, 1989). Since independence, almost all African nations have included a strong "democracy" component in the definition of national curriculum aims (Fagerlind and Saha, 1983). These aims and goals vary in approach as described below.

- **Conservative**. Using political education to support the current system with minimal discussion of controversial issues (Kenya, for example); civics courses are often this model.
- **Liberal/Democratic**. Stresses critical thinking, examination of evidence, fairness, tolerance of differences, participation, individual choice, and political literacy.
- **Radical**. Remodeling society with an ideological orientation; socializing students into new patterns of behavior; Tanzania (ujamaa) and Zimbabwe are examples of the radical model.

Syllabus contents usually include national unity, history of colonization and independence movements, and democracy. With the exception of Kenya, syllabii contain little or nothing explicitly on private enterprise (Harber, 1989). Some of the typical ways in which education

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for democracy and political socialization are integrated into school curricula are through the following methods.

- **Specifically Taught Courses**. Planned courses on politics and civics (civics courses are more common in francophone Africa).

- **Inclusion/Infusion in Other Curriculum Subjects**. In Nigeria, for example, textbooks in all subjects stress the desirability of national unity (Blakemore and Cooksey, 1981).

- **Special Programs**. Either in or outside of school (e.g., youth clubs, youth brigades).

- **School Organization Direction.** Explicitly includes socialization to democratic norms, participation in decision-making by students, and genuine power sharing; Nigeria, Zimbabwe, and Tanzania, all tried to implement more democratic forms of education, for example.

A crucial aspect of political education is the difference between theory (national education goals and aims, and stated curriculum content) and practice (what actually happens in classrooms and school and ways in which individuals have access to social mobility and political participation) (Harber, 1989; Thompson, 1981; Tyler, 1992). Students will learn political values at school whether or not a country has a set of education policies based on clearly articulated ideology that shapes the official curriculum. Indeed, schools will often reflect both government policies for education and the existing ideological values of a traditional political culture even though the two influences can be contradictory. There are important links between the acquisition of democratic values and the organization structure of schools and decision-making (for example, participation of students and staff in curriculum and other school decisions) (Harber, 1989; Meighan and Harber, 1986; Mgulambwa, 1985).

Researchers suggest that there are a number of important issues concerning the efficacy of political education in formal schooling, that is, the effectiveness of what is taught on beliefs, attitudes, values, and behavior (Fagerlind and Saha, 1983; Harber, 1989; Hopkin, 1971). Key issues in the analysis of the integration of democracy into the school curriculum are summarized below.

- The hidden curriculum dimension: students learn political values and behavior whether or not they are part of the official curriculum: they learn as a result of the way power and authority are distributed in everyday practices in classrooms and schools.

- Social organization of schools: the dominant hierarchical structure of schools is essentially a bureaucratic one and based on an organizational model of Western education that is essentially authoritarian in nature and is not the right setting for inculcating democratic values.

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- Tension exists between stated government policies for political education and existing ideological values of traditional political culture.

- Formal schooling is a significant but not the only major agent for political learning.

- Formal schooling is geared to the needs of the formal sector and therefore resistant to change and reform; pressure from examinations and for certificates necessary to gain access to jobs contradicts democratic practices and rhetoric (e.g., individual merit and hard work equals success) and promotes authoritarianism and corruption.

- Theory and practice contradiction: although major characteristics of educational systems are shaped by dominant educational ideologies, there are many contradictions between official policy and the actual operation of schooling.

- Context of learning and educational environments: there is a close link between teaching methods that promote discussion, group work, and cooperation and educational environments that encourage the development of democratic values (empathy, tolerance, etc.).

- Textbook and material contents contain biases that are not consistent with democratic values.

The initial review of literature suggests that political education, frequently stated in terms of education for democracy, is part of the stated goals and aims of virtually every national curriculum in Africa. With the exception of Kenya (see case study of Kenya in Harber, 1989), the literature revealed little information on issues of private sector in education. Better conceptual understanding of the curricular issues involved in private sector (definitions, goals, objectives, evaluation, and assessment) is necessary for future study. The scope, diversity, and amount of activity and the complexity of issues in this area would appear too vast for the present research and would merit a separate study.

C. ENVIRONMENTAL ISSUES

Many reports (Merryfield, 1988; UNICEF, 1992; UNESCO, 1988; USAID, 1990) indicate a high level of awareness on the part of central authorities in most African countries concerning the need to introduce environmental issues into school curricula. Plans for systematic policy development for the implementation and diffusion of environmental education appear to be widespread. More recently, the Rio Conference accelerated interest and activities in school-based environmental programs (EcoEd Conference Report, 1992). While there is growing interest and concern about environmental issues in Africa, actual integration of environmental content into educational systems has yet to be implemented (USAID, 1990). Although there appears to be consensus that environmental education is an essential tool in environmental and natural resource management, there seems to be confusion in identifying appropriate goals and educational objectives, and methods of implementing given constraints of resources and time (Mamadou, 1992).

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Two major formats for integrating environmental education into the curriculum are the interdisciplinary model, where environmental education is presented through a single taught subject, and the multidisciplinary model, where environmental education is infused into several subjects across the curriculum. Of the two models, several researchers suggest that infusion may achieve objectives more readily given the constraints of centralized education systems in Africa (Cowan and Stapp, 1987; Merryfield, 1989; Potter, 1990; UNESCO, 1988, 1992). It would appear that formal study of the natural environment is generally widespread at the primary school level (Potter, 1990). However, study of the natural environmental is not synonymous with environmental education. Most syllabus content focuses on knowledge of natural systems, basic nutrition, personal health and hygiene, and environmental sanitation and is, in general, linked to specific issues and environmental features in each country (Merryfield, 1989). Materials appear to be teacher-centered, didactic, and rely on abstract, rather than practical, hands-on knowledge (Cowan and Stapp, 1987). At the secondary level, subject specialization and pressure to gain academic credibility tend to freeze vital environmental issues out of the curriculum (Potter, 1990).

Literature on environmental education (Merryfield, 1988 and 1989; UNESCO reports) suggest effective school programs on environment have the following characteristics.

- The aim is to foster environmental literacy for all. Environmental literacy is defined as individuals who have environmental knowledge, and whose attitudes, values, and behavior patterns reflect concern for the environment.

- For acquisition and transfer of knowledge and skills, environmental literacy implies the ability to transfer information to the decision-making process (i.e., critical thinking and practice of decision-making need to be included in the pedagogical approach).

- A problem-solving approach is used. Transfer is more likely to take place where: (a) students have experience with a diversity of problems and understand that each problem is solved in a different way; (b) students learn to discriminate between relevant and irrelevant features so principles involved can be identified and applied; and (c) students must have opportunities to apply knowledge learned in a variety of situations.

Some researchers suggest that approaches to teaching about environmental concerns that have been successful either in western schools or in non-formal Third World projects are unlikely to be effectively implemented in Third World schools (Bude, 1989; Crossley, 1984; Glasgow, 1985, Potter, 1990; Vulliamy, 1987). Constraints to effective implementation of environmental education appear to be linked to perceptions of schooling and the economic, political and social contexts of schools. Unless these constraints are made explicit, attempts at integrating environmental education into the school curricula will, at best, remain only at the rhetorical level and, at worst, prove counter-productive. Vulliamy (1987) identifies three broad categories of constraints to successful implementation of environmental education in African schools as listed below.

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1. **Socio-political Context of Schooling**. Innovations not directly linked to the acquisitions of examination certificates are likely to be resisted.

2. **The Educational System Itself**. Additions to new learning experiences are likely to be rejected if they are not given the same examination status as conventional work; pedagogical approaches are formalistic and didactic (Beebe, 1980); interest groups, such as the school inspectorate, are likely to be more influential on teacher behavior than curriculum aims (Guthrie, 1980).

3. **School-Village Transfer**. Students do not perceive "school" knowledge as having relevance to their everyday environmental knowledge and practices (Vulliamy, 1987). Positive lessons learned from projects on environmental education are first, that schools can be effective when reinforcing policy and actions initiated outside the schooling system and second, that integration of environmental issues is successful when given high status by inclusion in high status subjects (such as mathematics, English, and science).

D. HEALTH AND HIV/AIDS ISSUES

There is a vast amount of literature on AIDS education in Africa, however, most efforts to include AIDS education in formal education are in the early stages. Many researchers suggest that the integration of HIV/AIDS education in school curricula is often limited to the didactic dissemination of information rather than changing behaviors (Osfield, 1992). The integration of "social issues" that aim to alter individual and social patterns of behaviors require participatory and interactive instructional approaches that address the development of problem solving and decision-making skills (Hartwig, 1992; Kapila, 1990; Merson, 1990; Oladepo et.al., 1991). Such instruction is limited by: (1) the traditional nature of instruction in Africa; (2) the authoritarian structure of schools inherited (and fossilized) during the colonial period; and (3) the lack of teacher training, both pre-service and in-service.

"Among the exemplary school and community-based programs that have succeeded in addressing specific health concerns, are those that have attempted to understand the life context of children and their families and those factors influencing the quality of their lives. From community diagnosis of health programs, these health promotion and education programs have attempted to stimulate and sustain family and community involvement in health promotion (Kolybine, 1991)." Many AIDS education programs are constructed around medical paradigms about the disease without addressing the ways in which individuals and communities respond and are impacted by the pandemic.

Some researchers suggest that individual behavior is related not only to the medical aspects of the disease but also to the way it transforms all the relationships in their lives (Barnett, T. and Blaikie, P., 1992; Hartwig, 1992). Thus, new behaviors, e.g., condom use, zero grazing, are not adopted because they challenge whole complex systems of values and "ways of coping" with predictable and unpredictable events. Gender issues, for example, are cited by many observers as central to successful AIDS education, yet raise issues and imply new attitudes and behaviors that go far beyond learning new information about transmission and prevention.

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"Put simply, it is not just that individuals and households make decisions and take risks or are more or less vulnerable. Rather it is that some environments are more risky than others, not only for decision-making about the production and re-production of the individual and the household but also in the particular downstream effects likely to develop as a result of an epidemic disease" (Barnett and Blaikie, 1992). The notion of "social context" in which students learn and apply knowledge learned in school has been identified as crucial to developing curriculum on AIDS and health issues.

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APPENDIX C

Sources Consulted

- General Bibliography
- Country Specific
- Statistics
- Democracy/Privatization
- Environmental Issues
- HIV/AIDS Issues
- Health/Population Issues
- Curriculum

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APPENDIX D

List of Contacts

- Botswana Contacts
- Republic of The Gambia Contacts
- Senegal Contacts

BOTSWANA CONTACTS

MINISTRY OF EDUCATION

Mr. Peter Molosi	Permanent Secretary, Ministry of Education P. Bag 005 Gaborone, Botswana
Peter Tethuma	Deputy Permanent Secretary, Ministry of Education
Marianne Nganumu	Science Education; in charge of health issues (from HN)
Philemon Ramatsui	Chief Education Officer, Curriculum and Evaluation Tel. 373-844
M.K. Mogasha	Chief Education Officer, Primary Education P. Bag 005 Gaborone, Botswana Tel. 360-0470 FAX 360-0458
Jack Reed	Environmental Education, Curriculum Specialist Natural Resources Management Project P.O. Box 131 Tel. 352-990, ext. 264 FAX 300-978
Mrs. Sue Mmagothi	Curriculum Development Center Tel. 352-990
Dr. Willi Karow	Chief Technical Education Officer P. Bag 005 Gaborone, Botswana Tel. 360-0469 FAX 360-0458
Mrs. Mogami	Chief Education Officer, Teacher Education Tel. 360-466
Maryanne Nganumu	Science Education; in charge of health issues
Fabric Mawela	Chief Education Officer for Secondary Education
Herbert Hlongwane	Education Officer, Gaborone Council Schools

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Kennedy Matlhape	Regional Primary Education Officer for Maun District P.O. Box 597, Maun
David Marsland	Regional Education Officer in Science, Maun Administration (Science education improvement project since 1985 in Botswana)

MINISTRY OF HEALTH

Mr. Alan Greig	National Aids Prevention Program Ministry of Health P. Bag 00269 Gaborone, Botswana
Mr. Lesetedi	Head of Family Health Division Tel. 35-35-61
Mrs. Moetii	Head of National AIDS Prevention Program Tel. 37-43-51 (on leave as of 12/11/92)
Lydia Seeletso	Education Head for National AIDS Prevention Program P. Bag 00269 Gaborone, Botswana Tel. 37-43-51

MINISTRY OF AGRICULTURE

Bonnake Tsmako	Head of women's section, graduate of MSU Tel. 35-05-00
Stanley Blade	Micro-enterprise report

KALAHARI CONSERVATION SOCIETY
Botsala House
Tel. 30-61-92

Ismael Kgomenjani	Director; new to job but will know people
Esther Makasi	Education Officer Tel. 31-42-59;35-11-31 (office) or Tel. 31-25-13 (home)

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UNIVERSITY OF BOTSWANA

Dr. Temba Vanqa	Dean of Faculty of Education
Bill Schreck	Language Services (former UMASS Student)
Dr. Mautle	Head of Primary Education
Modisi Mosathwani	Specialist in environmental education
Frank Youngman	Member of National Commission on Education Tel. 351-151 FAX 356591
Badzilyilo Baathuli Nfila	Center for Continuing Education (UMASS graduate) P.O. Box 486, Francistown Tel. 21-27-50 Has been asked to begin an adult education program in Francistown, sponsored by the University of Botswana (1/93)

UNITED NATIONS CHILDREN FUND (UNICEF)

Rizha House
African Mall
Tel. 352-752

Sheila Tacon-Barry	Director of non-formal activities and Brigades
Mrs. Samuels	Country Director, UNICEF

USAID/GABORONE

Barclay House
Tel. 353-382

Carol J. Culler	Southern Regional Advisor, African Women in Development Project, Barclay House Khama Crescent P.O. Box 2427 Gaborone, Botswana Tel. (267) 353-382 (office) or Tel. (267) 313-018 (home) FAX (267) 313-072
Howard Handler	Chief Officer
Beverly Reed	Assistant to Chief Officer

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Hector Nava	Human Resources Development Officer
Puska Bombar	Possible insights into status of Indian education
McCullum	Environmental education
Murray Simon	Directing BEC project; was on National Education Commiss

TEACHERS AGAINST AIDS

Mr. Ntebele	One of the strongest NGOs in Botswana

YMCA-PACT

Mrs. Vanqa	Director Tel. 374-113
Magdaline Mabuse	Coordinator of PACT program
Goitsel Letlole	Social worker from Kanye village; led workshop for PACT team leaders

BOTSWANA FAMILY WELFARE ASSOCIATION

Mrs. Romorato	*Emang Basadi* (Literally "Stand Up Women!") PVO organization defending women and children's rights

TEACHERS

Maureen Nene Nkwe	P.O. Box 48, Gabane (primary school teacher - 5)
Christabellah N.	Botsalano Primary School Private Bag TO4 Mbuthuma, Tlokweng
Antonette Kumeleno	Mafklhakaoli Primary School P.O. Box 30340 Morsumi, Tlokweng
Batoleli N. Molefe	Mafitlhakgosi School P.O. Box 30490 Tlokweng

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Jobs Kasu	Taung Primary School P.O. Box 40469 Gaborone
Elisabeth Chaseri	Teacher Advisor at the Regional Education Centre
Regina Selema	P.O. Box 642, Maun, Botswana Head Teacher, Boseja Primary School, Maun has taught all standards 1 - 7. As head teacher teaches all standards, but part-time. Educational background: GCE (O-levels) and has attended numerous week-long workshops on School Management (PIEP), Human Relations, Botswana Competency Instrument, Environmental Education, Guidance and Counseling, Religious Knowledge, Arts and Crafts, and Nutrition. Mrs. Selema served as the local consultant and informant in Maun.
Connie Modimoosi	P.O. Box 259, Maun Standard 1 Teacher at Botswelelo School with 14 years teaching experiences at all levels, standards 1 - 7. Holds Junior Certificate and Primary Teacher Certificate, and has attended seminar on Guidance and Counseling.
Oatlaretse Senase	P.O. Box 307, Maun Assistant Teacher, Bonatla Primary School, holds Junior Certificate and Primary Teacher Certificate. Has attended week-long seminars on Guidance and Counseling, Botswana Teaching Competency Instrument, Components of Good Teaching, Environment Conservation Awareness, and Association of Teachers Against AIDS.
Olebogeng Mooketsi	P. Bag 099, Maun Head Teacher, Mathibi I Memorial School, 15 years teaching experience teaching at all levels of standard 1 - 7. Educational background is Primary Teaching Certificate and week-long seminars on Management, Headteachers, and Human Relations.
Keene Felicity	P. Bag 097, Maun, Maphane Head Teacher, Tawana Memorial School, 16 years teaching experience. Education: Standard 7, Primary Teaching Certificate, week-long workshops on Management, Human Relations, Role of Head Teacher, Botswana Teaching Competency Instrument
Virginia Kooseie	Nokaneng Primary School, P. Bag 04, Maun, Mathethe Head Teacher, 15 years teaching experience with all classes in Standard 1, Junior Certificate and Primary Teacher Certificate. Has attended seminars on Human Relations, Management, Guidance and Counseling, Botswana Teaching Competency Instrument, and Administration.

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Setshwano Kememetswe	Kauxwi Primary School, P.O. Box 7, Shakawe Head Teacher, Kauxiui Primary School, 20 years teaching experience. Currently teaching standard 3. Education to Standard 7. Attended week-long seminars on Administration, Guidance and Counseling, Botswana Teaching Competency Instrument, and Management.

MAUN REGION

Regina J. Selema	Headteacher, Boseja Primary School, Maun Served as informant during visit to Maun. She is principal of the largest primary school in Maun, with over 1000 pupils, 15 classrooms, and 32 classes.
Margaret Modisi	Regional Officer for YWCA in Maun region.
Mrs. O.T. Tsheko	Resident of Maun. Widow, raised 9 children and has grandchildren in school in Maun presently.
Mrs. Daisy Wright	Counselor in Maun P.O. Box 77 Maun Tel. 660-255

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REPUBLIC OF THE GAMBIA CONTACTS

MINISTRY OF EDUCATION

Bedford Place, Banjul
Tel. (220) 27236

Dr. Balilu M. Bayo	Permanent Secretary Ministry of Education Tel. (220) 27236
Dr. Baboucarr Sarr	Deputy Permanent Secretary Ministry of Education Tel. (220) 28237
Mrs. Cecelia Baldeh	Coordinator Family Life Education-Population Studies Curriculum Research and Development Centre
Dr. Kemo Salia-Bao	Technical Expert Advisor Curriculum Research and Development Centre Lasso Wharf Banjul Tel. (220) 28467
Mr. Matar Baldeh	Ministry of Education Curriculum Research and Development Center
Mr. Momodou Rex Bojang	Teachers' Resource Centre Warden Regional Education Centre Brikama, Western Division Tel. (220) 84021
Mr. Hassan Joof	Principal Education Officer Ministry of Education (stationed at Brikama)
Mr. Tamsyr Saine	Senior Education Officer Ministry of Education (stationed at Brikama)
Mr. Kakai Samyang	Senior Education Officer Ministry of Education (stationed at Brikama)
Mr. Momodou Sanneh	Education District Officer Ministry of Education (stationed at Brikama)

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Mrs. Ayesatu Tombe	Lecturer Gambia College Brikama Tel. (220) 84812
Mr. Demba Keita	Teacher Pakalingding Middle School Mansa Konka
Mrs. Patricia Kumaka	Teacher St. Peter's Technical High School Lamin Republic of The Gambia
Mr. Abdoulie Sanyang	Senior Master and Garden Master Jambur Primary School P.M.B. 164 G.P.O., Banjul
Mr. Alanson Trawally	Teacher Pakalingding Middle School Mansa Konka

EUROPEAN ECONOMIC COMMUNITY

Regions III--Kerewan, and IV--Basse;
Tel. (220) 90181 and 90174

TRAINING IN PROTECTION OF THE ENVIRONMENT (TIPE)

Sahelian project in Regions II and IV

Mr. George and Mr. Thomas Riley	Project Director(s?) External funding ends at the end of 1992-1993, at which time the Republic of The Gambia will take up the project Tel. (220) 90181; 90174

INTERNATIONAL FOUNDATION FOR EDUCATION AND SELF-HELP (IFISH)

Mary H. Softly-Welch	Lecturer Gambia College, Human Services Specialist IFISH House in Banjul Tel. 96756
Mrs. Eartha Isaacs	Information Officer IFISH, 5040 E. Skes Blvd., Suite 260 Phoenix, Arizona 85251-4610 Tel. (800) 835-3530

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THE NATIONAL PARLIAMENTARY-MEDIA TASK FORCE ON CHILD SURVIVAL AND DEVELOPMENT

A voluntary organization comprising of members of Parliament and media practitioners; it was established in May 1989. Its purpose is to advance the general welfare and development of children and the task force plays a major advocacy role for children. In 1992, the task force organized successful activities to mark the Day of the African Child.

RADIO GAMBIA

Mr. Ebrima Cole — Assistant Director of Broadcasting, Radio Gambia, Mile 7
Tel. 95102 (office); 91235 (home)

Mrs. Amie Joof-Cole — Coordinator of radio dramas and radio broadcasts of educational materials, Radio Gambia, Mile 7
Tel. 95102 (office); 91235 (home)

SOCIETY FOR WOMEN AGAINST AIDS IN AFRICA (SWAAGAM)

Consortium of many societies; based in Lagos, Nigeria
Tel. (220) 29020
FAX (220) 29868

UNITED NATIONS CHILDREN FUND (UNICEF)

10 Nelson Mandela, Banjul
Tel. (220) 28988

Dr. Lawalley Cole — Oversees environment and women's issues Mandela, Banjul.

Dr. Marios DeJong — Acting Officer-in-Charge (Director was out of town during my visit)
Interested in health issues

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USAID/BANJUL

American Embassy
PMB No. 19
Banjul, The Gambia
Tel. (220) 28573
FAX (220) 28066

Bonnie Pounds	Mission Director
Fred Whittans	Program Officer

UNITED STATES EMBASSY

19 Kairaba Avenue, Fajara East
Tel. (220) 92856

Arlene Render	Ambassador

UNITED STATES PEACE CORPS

78 Kairaba Avenue, Fajara East
Tel. 91970/1; 91803; 92120; 92466

Dr. Nanette Hegamin	Director

VOLUNTARY SERVICE ORGANIZATION (VSO)

British Volunteer Organization
Tel. 84079

Anne Plested	VSO volunteer working with schools Tel. 84079

WOMEN IN DEVELOPMENT

Banjul
Tel. (220) 29761

Mrs. Adelaide Sosseh

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SENEGAL CONTACTS

PROGRAMME DE FORMATION INFORMATION SUR L'ENVIRONMENT

Oumar Sy
Cite Elisabeth Diouf No. 59
B.P. 21.617 Dakar Ponty
Tel. and FAX (221) 32-12-92
Domicile SICAP
MBAO - No. 080, Dakar
Founder of CILSS (Comité Inter Etats de Lutte contre la Sécheresse)
Pilot program at Podor
Inspection Départmentale de l'Enseignement
Tel. 65-12-25

UNION DEMOCRATIQUE DES ENSEIGNANTS DU SÉNÉGAL (UDEN)
UNION NATIONALE DES SYNDICATS AUTONOMES DU SENEGAL (UNSAS)

Rue 13 X Q Derkle, Dakar
Tel. 221-25-32-61
FAX 221-20-08-07
(Attended EcEd conference)

MINISTRY OF NATIONAL EDUCATION-MINISTÈRE DE L'EDUCATION NATIONALE

Rue Dr. Calmette, face Ministère du Commerce
Tel. 21-71-80

DIRECTION DE L'EDUCATION MOYENNE ET GÉNÉRALE

Birahim BA
Directeur de l'enseignement Moyen Secondaire général
B.P. 4025 Dakar
Tel. 22-18-62
(Attended USAID/REDSO workshop in Abidjan, with Martin Schulman, 11/91)

DIRECTION DE LA PLANIFICATION ET DE LA RÉFORME DE L'ÉDUCATION

Bougouma Ngom
Directeur
Tel. 21-35-21
(Attended REDSO workshop)

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Makhoumey Fall	Chief of Planning Division Tel. 21-71-80/poste 393
Boubacar Niane	Researcher (recommended by Madiodio Niasse, USAID) Chief of Reform Division Tel. 21-12-88; 21-71-80; 21-09-27; 22-21-52 (connected me with school and teachers)
Medoune Gaye Ndaw	Technical Director of Family Life and Population Education Project Planning Division and Education Reform
Mody Niang	Principal Inspector of Elementary Education Pedagogic Coordinator of SEN/90/P03 Project (Family Life and Population Education) Planning Division and Education Reform
Pape Sow	Chief of Human Resources Division Planning Division and Education Reform Tel. 21-07-62 (bureau) or 25-66-69 (domicile)
Khady Niang Diallo	Departmental Inspector of Elementary Education of Grand Dakar 1

ECOLE AHMADO BAMBA MBAKHANE
Diop 2,
Zone B, Daar

Assane Diouf	Director
Fatou Fall	Teacher CE2 (11 years experience)
Magatte Kane	Teacher CPB (3 years experience)
Josephine R. Sall-Sanggna	Teacher CIB (10 years experience)
Marieme D. Diallo	Teacher CPA (13 years experience)
Mounir Diagne	Teacher CEIIB (13 experience)
Mouhamed L. Ndiaye	Teacher CEIA (13 years experience)
Ali Mar Seye	Teacher CMIIA (25 years experience)
Oumar Diakhate	Teacher CEIB (8 years experience)
Cheikh Mbow	Teacher CMIA (18 years experience)
El Hdadji M. Maamoune Gueye	Teacher CIA (18 years experience)
Abdoulaye Farr	Teacher CMIIBB (15 years experience)
Birame Feck	Teacher CMIB (10 years experience)

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INSTITUT NATIONAL D'ÉTUDE ET D'ACTION POUR LE DÉVELOPPEMENT DE L'ÉDUCATION (INEADE)

Curriculum development and think tank on national education
Tel. 22-63-87

Tamsir Sam — Chief of Evaluation Division at INEADE

INSTITUT DE LA FORMATION CONTINUE

Younousse Diaw — French Officer in charge of Human Resources Development Project -- funded by the World Bank)

Younoussa Diolilo — (recommended by Ngokwye)

MINISTÈRE DE LA PROTECTION DE LA NATURE

Baqkary Kante — Environmental Director
Tel. 21-91-44; 21-90-52

ENVIRONNEMENT ET DÉVELOPPEMENT DU TIERS-MONDE (EDNA T.M.)

(Funded through IDEP/UNEP/SIDA/DDA, etc.)
4 et 5, Rue Kléber
B.P. 3370
Dakar
Tel. (221) 21-60-27
FAX (221) 22-26-95

Abdel Kader Bacha — Director

Raphael Ndiaye — Environmental Education and Communication Team Coordinator
54, Rue Carnot
Tel. (221) 22-98-90
Tel. EDNA siège (221) 21-60-27; 22-42-29
FAX (221) 22-26-95
(Attended USAID/REDSO workshop in Abidjan)

As Sy — Coordinator of programs on health
Tel. 22-96-95

Pape Tall — Coordinator of youth and street programs (programme actions jeunesse)

Jacques Bougnicourt — Director

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ASSOCIATION SIDA-SERVICES
Run by Soeurs des Materites Catholiques
Tel. 25-62-07

Soeur Marie Timotée
Soeur Marie Aline

SCOUTS DE SÉNÉGAL

Jean Alfama Tel. 21-73-67

CONFÉRENCE DES MINISTRES DE L'EDUCATION DES PAYS AYANT EN COMMUN L'USAGE DU FRANCAIS (CONFEMEN)
Immeuble KEBE, Extension - 3ième étage
B. P. 3220
Dakar
Tel. 1-21-60-22 (bureau); 21-80-07 (direct);
Tel. 21-84-88 (home)

Camille Rony Program Counselor

Francoise Mari Program Counselor
Tel. 221-21-60-22 (bureau); 21-900-07 (direct)

CENTRE AFRICAIN DE DÉVELOPPEMENT EN EDUCATION (CADRE)

Ibrahima Thioub General Secretary (recommended by Madiodio Niasse)

AFRICAN CONSULTANTS INTERNATIONAL
Baobab Training and Resource Center
509 SICAP Baobab, 509 Allee Seydou Nourou Tall

Lillian Baer Tel. 25-36--37 (bureau); 25-62-55 (home)
Gary Engleberg FAX (221) 24-07-41

METHODIST MISSION AGRICULTURAL PROGRAM

Samuel H. W. David Program Director
P.O. Box 288
Banjul, The Gambia

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WORLD NATURE UNION

Monique Trudel — Regional Advisor for Environmental Education and Communication
UNICN BP 1567 Bamako
Tel. (223) 22-75-2
(Recommended by Julian Inglis from REDSO workshop)

TOSTAN

NGO program funded by UNICEF and various other NGOs

Molly Melching — Program Director and founder (ex-PCV)

Amadou Ba — Assistant Director

FAMILLE ET DÉVELOPPEMENT GROUPE
(Recommended by Evangeles Petropolous)

CRDI-CENTRE DE RECHERCHE ET DÉVELOPPEMENT INTERNATIONAL/IDRC RESEARCH CENTER

Sibry Tapsoba — Regional Program Officer
B. P. 11007
Dakar
Tel. 24-42-31; 24-09-20 (bureau)
Tel. (221) 25-90-16 (domicile)

ASSOCIATION DES FEMMES AMBASSADRICES

Jacqueline Bilodeau — (Canadian ambassador's wife)
Tel. 23-92-90 (bureau); 25-05-12 (home)

SOS ENVIRONNEMENT

Abdouraman Tamba — Tel. 57-74-28
Environment Protection Association. Tamba is a natural science professor in high school (Lycée mixte) - organizes "brigades d'hygiène" with professors and college students to focus on environmental problems in urban areas. The brigades' goal is to have an impact on the environment.

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INDEPENDENT RESEARCH/CONSULTANT

Sylvie Joceline Daouda	Recommended by Camille Rony--worked for UNICEF Tel. 23-69-19 (bureau); 24-54-59 (home)

ARED

Sonia Diallo	Runs an integrated grassroots literacy network for Poular in Podor; recommended by Gary Engelberg; has worked for USAID; very knowledgeable about what's happening in Senegal in education, both formal and non-formal.

ABACED

Peer education on AIDS/youth-to-youth; recommended by Gary Engelberg

Daoudi Diop	Tel. 25-70-56
Assame Diagne	Tel. 21-28-75

UNITED NATIONS CHILDREN FUND (UNICEF)
43, Avenue Albert Sarrault
B. P. 429, Dakar

Samir Sohby	Director of UNICEF/West Africa Tel. 22-50-80; 21-47-80
Ndolamb Ngokwey	Senior Programme Coordinator, responsible for education Tel. (221) 23-50-80 FAX (221) 23-46-15
Samba Tossel Niane	Assistant Programme Officer, responsible for Daara Programme Tel. (221) 23-50-80

UNIVERSITE DE DAKAR
Institut des Sciences de l'Environnement

Oumar Wane	Director of studies Tel. 24-23-02
Bienvenue Sambu	(recommended by Gary Engelberg)
Cheik Niang	(recommended by Gary Engelberg)

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ECOLE NORMALE SUPÉRIEURE

Boubacar Kane	Inspector of Education (good resource for the education's system) Recommended by Gary Engelberg
Danièle Gosnave	Currently working with Family Life and Population Education Project on curriculum materials development: formerly Directrice des filles à l'Ecole de l'Ordre de Lyon à Gorée. Tel. (221) 22-09-35 (bureau) Recommended by Gary Ergelberg

USAID/Abidjan

Julius Coles	Mission Director
Douglas Sheldon	Deputy Mission Director
Iqbal Qazi	Environment Officer
Jan van der Veen	Program Officer
Julienne Nunez	Administrative Assistant to van der Veen
Fatou Kader	Director of the Documentation Center
Madiodio Diasse	WID
Rod Kite	Agronomist/Agriculture/NRM
Addoullaye Ndiaye	NGO support project
Medjomo Coulibaly	Regional Advisor/Education and Human Resources Development. USAID/REDSO/WCA - Abidjan
Martin Schulman	Chief, Human Resources Development Office USAID/REDSO/WCA c/o U.S. Embassy 01 BP 1712 Abidjan 01 Côte d'Ivoire Tel. (225) 41-45-28 FAX (224) 41-35-44 (Organizer of REDSO workshop)

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PEACE CORPS

Avenue de Papa Gueye Fall (en face de la grande mosquée)
Tel. (221) 23-70-14

Bruce Cohen	Country Director
Jeannie Friedman	PTO/Health, Dakar
Scott Lewis	Environmental education started school environmental education program in national parks

PEACE CORPS REGIONAL CENTER

B.P. 504, Thies

Seydou Dieye	Language Coordinator
Mame Sylla	Language Instructor

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APPENDIX E

ECONET Accessible Conferences Concerning Education

ECONET ACCESSIBLE CONFERENCES CONCERNING EDUCATION

dev.education

Description:	A forum for people working in development/global education (formal & informal) to exchange news, views and plans and to facilitate cooperation.
Sponsor:	European Development Education Network
Contacts:	eden@gn
keys:	education, development, JPIC, awareness

(Selected topics of interest in this conference as of 8/18/93).

7/29/93	*Work with women and development gn:eden*
8/03/93	*Internat'l Village Dev. Conf. malbertson*
8/17/93	*Gender and Development gn:leedsdec*

en.enveducation

Description:	Selected publications, events & awards of interest to environmental educators.
Contacts:	tva, efenster
keys:	environment, education

(Selected topics of interest in this conference as of 8/18/93).

7/15/93	*Environmental Education Grants 1993 aalm*
7/30/93	*Telecommunications and K-12 Educato aalm*

naee.bibliogra

Description:	Directory for resources of environmental education.
Sponsor:	Nat'l Assoc for Environmental Education
Contacts:	econet

(Selected topics of interest in this conference as of 8/18/93).

4/26/89	*Science Education econet*
4/26/89	*Social Science Education econet*
4/26/89	*Values and Moral Education econet*
5/21/93	*Computer-aided Env. Ed. Resources rrohwedder*

naee.clearingh

Description:	Information on clearing houses and other information resources pertaining to education, government and nongovernmental information pertaining to environmental education.
Sponsor:	Nat'l Assoc for Environmental Education
Contacts:	econet

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(Selected topics of interest in this conference as of 8/18/93).

2/06/93	*Pathways and Modeling web:rdix*
4/14/93	*Faculty Development Workshop cemtufts*

naee.databases

Description:	List of environmental education databases and other electronic resources.
Sponsor:	Nat'l Assoc for Environmental Education
Contact:	econet

naee.directori

Description:	Directories in print of various institutions, organizations and agencies; leaders, experts and members; programs, centers and sites; libraries, publications and media--all pertaining to environmental education.
Sponsor:	Nat'l Assoc for Environmental Education
Contacts:	econet

aee.bibli

Description:	Teaching aids, classroom experimenting and exploring kits, books on environmental education methods and topics to cover.
Sponsor:	Alliance for Environmental Education
Contacts:	alliance, aalm
keys:	aee, education, environment, bibliography

aee.curriculum

Description:	Reports on trends and practices found in current environmental education curricula.
Sponsor:	Alliance for Environmental Education
Contacts:	alliance, aalm
keys:	aee, education, environment, curriculum

(Topics of interest in the conference as of 8/18/93).

4/09/90	*Curriculum Trends 4 econet*
4/09/90	*Curriculum Practices econet*
7/20/90	*Add't Trends&Prac. (appx 385 lines) econet*
10/09/90	*3rd & 5th gr. materials needed 2 ryenaturectr*
2/14/92	*ocean activities 6 ryenaturectr*
7/09/92	*Public School EE Policy 1 kmeyer*
7/24/92	*Request for Air Quality Curricula airboard*
10/20/92	*Environmental Material eitt*
11/20/92	*ResEE discussion beginnings web:mwhitcombe*
3/11/93	*schoolyard wildlife habitat curric cesdodge*
4/29/93	*Energy Conservation High School*
5/25/93	*New Curric Devel Project:Air Pollu mdresner*

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